

JOURNAL of FARM ECONOMICS

NOV 18 1929

OCTOBER, 1929

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Published Quarterly by
THE AMERICAN FARM ECONOMIC ASSOCIATION
Publication Office: 450 Ahnaip Street, Menasha, Wis.

Executive Office: W. I. Myers, Secretary-Treasurer,
Cornell University, Ithaca, N.Y.

Price: \$5 per year, this issue \$1.25
Entered as second class matter at the post office at Menasha, Wis.

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JOURNAL of FARM ECONOMICS

VOL. XI

OCTOBER, 1929

No. 4

ANALYSIS OF THE RELATION OF QUALITY TO PRICE OF COTTON

B. YOUNGBLOOD

BUREAU OF AGRICULTURAL ECONOMICS

Is there an elusive fallacy lurking beneath the economic theory now taught to thousands of students in our institutions of higher learning, to the effect that the value of a good is dependent in part upon its scarcity or abundance and in part upon its utility? Or, is the influence of quality upon utility, and of utility upon values and prices, insufficiently emphasized in both theory and practice?

Let us see what some of the authorities have to say about quality. Clark says, "Final utility itself has been studied in a way too narrowly limited. In the case that is usually cited, one commodity is taken and, in imagination, is given in increasing quantity to one consumer. . . . Vary the articles in kind and you have a different result. . . . By changing the quality of the articles offered you appeal to different wants. . . . Where we thus vary the quality of the second increment of an article offered to a consumer, we virtually offer him a different article, which renders a new and distinct service."¹ Jevons says, "A minute difference of quality in a commodity may thus give rise to preference, and cause the ratio of exchange to differ."²

Quality, of course, is quite generally recognized in the

This paper was read at the nineteenth annual meeting of the American Farm Economic Association at Chicago, Ill., December, 1928. Certain figures have since been revised.

¹ Clark, John Bates. *The Distribution of Wealth*. 1899. p. 209.

² Jevons, H. Stanley. *The Theory of Political Economy*. 1911. p. 90.

theory of the distribution of wealth. Land, for example, is of many grades, the marginal land producing no rent and the rent of the better grades increasing with their productivity and nearness to market. In a similar manner, gradations of productivity, quality, and value are recognized in labor, capital and entrepreneurship. Jevons says, "Each portion of land should be applied to that culture or use which yields the largest total utility as measured by the value of the produce; if otherwise applied there will be loss. Thus the rent of land is determined by the excess of produce in the most profitable employment."³

If Jevons is right, then we are making the best possible use of the cotton lands of the South when we plant cotton rather than some other crop; provided, we do not find a crop more profitable than cotton. To the extent, however, that we plant gin-run seed or scrub varieties of cotton, which do not contribute in point of yield and quality to the greatest possible net returns we fail to put our cotton lands to their most profitable employment.

Thus it appears that, in harmony with economic theory, individual and national incomes from cotton are being unfavorably influenced by the production of large crops of low-quality cotton instead of more moderate crops of high-quality cotton. This statement can be made with the more assurance since cotton breeders have long since learned that well-bred varieties produce better yields than scrub varieties, and at the same time produce cotton of higher spinning utility.

Quality and Its Measurement

Dr. Ely says, "Any thing that is capable of satisfying human want is a good, and it possesses utility."⁴ I am sure that all will agree that utility is not an inherent property, but a relationship between human wants and the goods which will satisfy them. Goods satisfy human wants, however, because they possess certain properties—physical, chemical, biological, or others—which allay desires and bring us satisfaction and pleasures. The term "quality" refers to the particular properties and the extent to

³ Jevons, *op. cit.* p. xlix.

⁴ Ely, Richard T., *Principles of Economics*. 1920. p. 105.

which they are present in an economic good—and quality standards are set up for their measurement.

Early in the history of Government it was found necessary, in part for convenience in trading and in part for protection to buyers and sellers, to set up official standards defining the exact weight and fineness of gold and other media of exchange. For the same reasons, it has seemed equally necessary for convenience in trading and for the protection of buyers and sellers to maintain official standards prescribing not only the weight but the quality of cotton.

For the sake of simplicity, the theory of utility is explained by presuming a good perfectly homogeneous in quality, whereas, in fact, few such commodities actually enter the channels of trade. Cotton, for example, is a generic term, embracing literally hundreds of commodities varying in desirability both as production and as consumption goods. Differentiations in their quality are based upon the ideal of a perfect cotton. As a matter of fact, no such cotton was ever grown, but some cottons approximate the ideal more nearly than others. A perfect cotton would be one in which the fibers were perfectly uniform in length and other properties, and which could be spun into a perfect yarn of the count desired, at a minimum of expense. A perfect yarn, in turn, would be one of the count desired and possessing perfect uniformity, strength, brightness, and such other properties as would satisfy the preferences of weavers, clothing manufacturers, and ultimate consumers.

In the early days of the spinning industry, the spinners went into the markets and selected out of the cottons offered, such as would suit their particular needs. This practice gave rise to the art of classing and to the development of, first, private and, later official standards. When the United States became a cotton-growing country, the merchants and factors operating in our markets began to employ cotton classers so that they themselves might select the cotton and put it into even-running lots suitable for spinners.

American cottons are classed in accordance with official standards for grade and staple length, to determine how

near they approach the ideal of a perfect cotton. Their quality is expressed, in the language of the classer, in terms of grade, staple, and character of each bale. Each of the gradations of quality so measured is a distinct commercial commodity occupying, at a given time and place its own level of anticipated spinning utility, value, and price. Needless to say, the lower the grade, staple, and character of the cotton, the lower its spinning utility and the less its contribution to the consumer's good. These relationships, however, are somewhat complicated because of the fact that, within reasonable limits, adjacent grades, staple lengths, and characters of cotton may substitute for each other in a given use.

Of the three market designations for the quality of cotton, staple length and character are quite generally recognized to be of greater significance than grade. The grading of cotton is a matter of passing upon its freedom from foreign matter, its color or brightness, and the physical condition in which the gin leaves the lint. Stapling is a more difficult task. It is a matter of passing upon the length, strength, uniformity, and the more evasive essentials of character.

Since the price of cotton is influenced by market opinion concerning the scarcity or abundance of the several grades and staples, it is well to have public information concerning them. The greater the doubt, the greater the risks of cotton trading; and the greater the risks of trading, the greater the exactions of those who assume them.

Studies of mill consumption indicate that the possibility for substituting one length for another in a given use is greatest among the shortest lengths and least among the longest. With considerable allowance for overlapping, Table I shows the general relationship between the staple lengths, the counts of yarn, and the fineness of the goods manufactured from them.

In the manufacture of coarse yarns, the spinner has a range of probably $\frac{1}{4}$ inch within which he can vary his staple; depending, of course, upon the coarseness of the yarn being spun. In the manufacture of medium yarns, the spinner's latitude is probably $\frac{1}{16}$ inch each way, or a

TABLE I.—RELATED STAPLE LENGTHS, YARN COUNTS, AND FINENESS OF GOODS.¹

Staple Length	Yarn Count ²	Kind of Goods
Short 15/16 inches & under	Course 1s—20s	Course
Medium 29/32—1 3/32	Medium 20s—40s	Medium
Long 1 1/8—1 1/2	Fine 40s—120s	Fine
Ex. Long 1 5/8—2 1/4	Ex. Fine 120s—300s	Ex. Fine

¹ See Clark, W. A. Graham, "Weave Room Calculations," 2nd Ed. p. 243.

² Standard for numbering cotton yarns:

Ex.: Number 1 count—1x840= 840 yards of yarn in 1 pound.

Number 2 count—2x840=1680 yards of yarn in 1 pound.

total range of $\frac{1}{8}$ inch. In the manufacture of fine to extra fine yarns, the range narrows from possibly $\frac{1}{8}$ to $\frac{1}{16}$ inch within the lengths varying from $1\frac{1}{8}$ to $1\frac{1}{2}$ inches, and from $\frac{1}{16}$ inch in the neighborhood of the $1\frac{1}{8}$ inch staple towards zero at the $2\frac{1}{4}$ inch length. For special purposes, however,—automobile, truck and bus tires, for example—requiring great strength of yarn, coarse yarns are made from long staples. On the other hand, fine yarns are not made from short staples.

Within the possibilities of substituting one length or grade for another, the spinner varies his purchases in accordance with the differences in price of the grades and staples which compete for his particular use. Like everyone else in the markets, he is looking for bargains.

The exact area and extent of competition between grades and staple lengths, however, has not as yet been studied exhaustively. The figures used are only approximate and are presented merely to suggest the possibilities for further research in this field.

Quality and the Farmer

Is it possible that because of a blind spot in the local markets, the cotton growers, instead of serving their own best interests, are in effect contributing to the ills of the Cotton Belt as a whole?

Attend any of the local, State, or Belt-wide meetings of cotton growers, commonly held just before planting time, and you will find intelligent men earnestly endeavoring to decide the ever-recurring question, "What is the matter with the price of cotton?"

The principal subjects discussed at the hundreds of such

meetings which I have attended during the past twenty years, have been the price situation, acreage reduction, and better cotton. In these meetings, the delegates are usually attentive and give each speaker a hearty applause; but between the sessions, in the hotel lobbies, the delegates feel free to express their views, and the discussions frequently take a quite different turn. They may explain to each other that quality doesn't count in the farmers' markets, and that they prefer to grow the kinds of cotton that will give them the biggest yields. In these discussions, the view is frequently expressed that well-bred varieties producing superior staples are less hardy and less dependable as to yields than their more rustic, gin-run relatives.

The foregoing statement is characteristic of the views of probably 75 per cent of the cotton growers from North Carolina to western Texas. It presents a picture of a typical unorganized local market in the Cotton Belt, where the farmer sells his cotton on the basis of an averaged price for the roughly estimated average run of the quality of the bales marketed each day. Evidently the individual grower who sells in these markets is convinced that, regardless of quality, the more cotton he can produce at a given expense, the greater will be his net returns.

This fallacy springs from the fact that in most of these markets, more often than otherwise, those who produce high-quality cotton are effectively penalized, while the growers of short inferior staples are rewarded for their efforts. This situation is confusing indeed when it is recalled that the spinners pay sharply-drawn differentiations in price for the different grades and staple lengths. It is countenanced among growers upon the strange hypothesis that one kind of cotton spins about as well as another and, consequently, merchants and spinners pay practically as much for short staples as for long.

Results of studies made in Texas during the past few years of the relation of the grade and staple length of cotton to local or farmer's prices, merely verify the foregoing. At Henderson and Hillsboro, for example, it was found that on a particular date a high grade was likely to sell for less than a lower grade. Likewise, a long staple

was likely to sell for less than a medium or short staple on the same day and in the same market.

By comparing different markets, it was found, however, that there is some recognition of the average quality of cotton grown in the neighborhood and marketed at these points. At Hillsboro, during the season 1927-28, Middling cotton $\frac{3}{8}$ of an inch in length, for example, averaged about 74 points higher than the same grade and staple length at Henderson. Other examples which might be cited indicate similar differences between prices of cotton at Lubbock and Robstown.

It will be seen that, while the individual farmer may feel that he is profiting by the production of low-grade or short-staple cotton, he is obviously lowering the average of the quality of cotton in his market and, therefore, the average price level not only for himself but for all his neighbors. From a community standpoint, therefore, the higher the quality of the cotton, the higher the price level.

Thus quality is receiving inadequate recognition on the farms and in the local markets—a paradoxical situation when it is realized that to-day we have more and better cotton breeders, and actually produce more bales of excellent quality, than ever before in our history. The rub comes from the fact that the increase in production of the better staples has by no means kept pace with that of the lower grades and shorter staples. Any program for the improvement of conditions in the Cotton Belt should begin, therefore, with the local markets. It need not be expected that the cotton growers will appreciate the importance of quality so long as they have no adequate incentive to grow better cotton.

Quality and the Organized Markets

Since economic theory has been developed from human experience, it is not surprising to find the trading in these markets conducted on the basis of quality. As a rule, official quotations show that, at a given time and place, the higher grades and longer staples sell at higher prices than the low grades and short staples. Apparent exceptions are cases of distressed trading in the spot cotton markets in which

either the seller must sell or the buyer must buy immediately, practically without regard to prices.

Table 2 will serve as an illustration of the relative values of the different grades. Table 3 gives for the same period, the premiums and discounts quoted in six designated markets.

TABLE 2.—AVERAGE GRADE DIFFERENCES FOR THE 10 DESIGNATED SPOT COTTON MARKETS OF THE UNITED STATES, SEASON 1927-28.¹
(Basis, Middling 7/8"; Average Price 19.72 cents)

Grade	Premiums and Discounts	Difference in Value per bale of 500 pounds
	<i>Points²</i>	<i>Dollars</i>
Middling Fair	100 On	5.00
Strict Good Middling	76 On	3.80
Good Middling	50 On	2.50
Strict Middling	33 On	1.65
Middling	Even	Basis
Strict Low Middling	51 Off	—2.55
Low Middling	114 Off	—5.70

¹ From Official Records, Division of Cotton Marketing, Bureau of Agricultural Economics.

² 100 points—1 cent per pound.

TABLE 3.—STAPLE PREMIUMS AND DISCOUNTS IN CERTAIN SPOT COTTON MARKETS FOR THE PERIOD AUGUST 1, 1927 TO JULY 31, 1928.¹
(Basis, Middling 7/8"; Average Price 19.72 cents)

Staple Length	Premiums and Discounts	Difference in Value per 500 pound bale
	<i>Points²</i>	<i>Dollars</i>
1 1/4 inches	550 On	27.50
1 3/16 inches	400 On	20.00
1 1/8 inches	250 On	12.50
1 1/16 inches	175 On	8.75
1 inch	93 On	4.65
15/16 inch	37 On	1.85
7/8 inch	Even	Basis
13/16 inch	50 Off	— 2.50

¹ The price of Middling 7/8 and the premiums for 15/16 inch and 1 inch staple are the averages of official quotations in 6 designated spot cotton market as follows: Dallas, Houston, Galveston, Little Rock, Memphis and New Orleans. The premiums for 1 1/16 inches and above are the averages of the Memphis and New Orleans quotations.

The grade differences and staple premiums listed, of course, do not cover the gamut of grades and staple lengths, but serve to illustrate how differences in quality are reflected in the prices quoted in the futures and spot cotton markets. A comparison of Table 2 with Table 3 rather clearly indicates the greater economic importance of staple length than of grade. The one is a matter of breeding, whereas the other is largely the result of the weather and the lateness of picking.

The influence of quality is also suggested by the fact that the November 30 grade and staple reports show that of the white cotton ginned to November 1, 1928, 4.3 million bales were Strict Middling, whereas only 2.4 million bales were Middling. Notwithstanding the greater abundance of Strict Middling, it averaged 0.26 cent per pound above the price of Middling from August 1 to November 30, 1928.

These differences in price cannot be accounted for by differences in either the domestic mill consumption or the cotton in the carry-over of the United States for the year ended August 1, 1928.

TABLE 4.—CONSUMPTION AND CARRY-OVER OF AMERICAN UPLAND (WHITE) COTTON, BY GRADES

Grade	Consumption ¹	Carry-over ²	Consumption	Carry-over
	<i>Bales</i>	<i>Bales</i>	<i>Per Cent</i>	<i>Per Cent</i>
Good Middling	605,242	173,424	9.28	6.85
Strict Middling	2,044,057	761,458	31.35	30.08
Middling	2,061,947	752,279	31.62	29.72
Strict Low Middling	657,952	330,001	10.10	13.04

¹ Extract from the report on the consumption of cotton by domestic mills for the year ended July 31, 1928, U.S.D.A., Bureau of Agricultural Economics, Division of Cotton Marketing.

² Extract from the estimate of the grades and staple lengths of the cotton in the carry-over in the United States on August 1, 1928, U.S.D.A., Bureau of Agricultural Economics, Division of Cotton Marketing.

About 60 per cent of the white cotton in the carry-over consisted of equal parts of Middling and Strict Middling. Of domestic mill consumption of White cotton, 32 per cent was Middling and 31 per cent was Strict Middling. Though no definite estimates have been made covering foreign consumption by grades and staples, we have nothing to suggest that they would alter the conclusion that quality exerts an important influence in the determination of values and prices. It is conceivable, however, that radical changes in supply-demand relations of different grades and staples might, for a time at least, reverse the rule.

A more complete analysis of the relation of quality to the price of the different grades and staple lengths might be made had we more definite facts concerning their consumption. Thus far we have only the general phenomena that, at a given time and place, the longer the staple and the better its character, the better the price; and that from early days to the present time, cotton merchants and spin-

ners, both foreign and domestic, have recognized differences in the spinning quality of the distinctive growths of American cotton. They have preferred the cottons, for example, of the black lands of Texas to those of the sandy uplands; the cottons of the Mississippi Delta to those of the black lands of Texas; and so forth. Prices paid have reflected these preferences.

Quality and Quality Statistics

Considering the fact that both the scientific and the practical worlds have given general recognition to the influence of quality on the value and price of cotton, it seems queer indeed that we should have kept such excellent records of the number of bales produced and carried over from year to year, but no corresponding records of the qualities of the different bales.

In recognition of the important relation which quality bears to price, the Bureau of Agricultural Economics was authorized two years ago to make a tentative study of the grades and staple lengths of cotton produced in the State of Georgia and of domestic mill consumption for the year ended August 1, 1928. The results obtained in these preliminary studies were so suggestive of the importance of work of this character, that the Bureau was further authorized to make similar studies covering the entire American cotton crop for the 1928-29 season.

The report issued on January 4, 1929, presents some surprising information concerning the distribution of staple lengths of American cotton. (See Table 5.)

It will be noted that we are actually producing less of 1 inch and 1-1/32 inches than of 13/16 inch staple and under, notwithstanding the differences in their respective prices. Classified another way, more than 78 per cent, or 9.8 million bales, was short staple 15/16 of an inch and under in length; 17 per cent, or 2.1 million bales, was medium staple 1 to 1-3/32 in length; and that less than 5 per cent, or nearly 618,000 bales was long staple, 1-1/8 inches and over in length.

Contrast with the foregoing, the figures from a companion report showing the consumption of domestic mills

TABLE 5.—ESTIMATED UNITED STATES PRODUCTION¹ AND CONSUMPTION² OF COTTON, BY STAPLE LENGTHS

Staple Length (inches)	Production ¹ (ginnings to Dec. 1, 1928.)	Consumption ² (year ending July 31, 1928)	Production (ginnings to Dec. 1, 1928.)	Consumption (year ending July 31, 1928)
	<i>Bales</i>	<i>Bales</i>	<i>Per Cent</i>	<i>Per Cent</i>
Total	12,561,618	6,534,946	100.00	100.00
13/16 and under	1,674,425	93,842	13.33	1.44
7/8	5,225,469	1,878,201	41.60	28.74
15/16	2,929,352	1,782,817	23.32	27.28
1 and 1 1/32	1,472,537	1,854,915	11.72	28.38
1 1/16 and 1 3/32	642,084	372,208	5.11	5.70
1 1/8 and 1 5/32	413,117	273,404	3.29	4.18
1 3/16 and 1 7/32	155,599	251,691	1.24	3.85
1 1/4 and over	49,035	27,868	0.39	0.43

¹ Based on the grade and staple report for the United States, U.S.D.A., Bureau of Agricultural Economics, Division of Cotton Marketing, in cooperation with the State Agricultural Experiment Stations, issued on January 4, 1928.

² Based on the report on the consumption of cotton by domestic mills for year ended July 31, 1928. U.S.D.A., Bureau of Agricultural Economics, Division of Cotton Marketing. (Does not include foreign cottons.)

by grades and staples for the year ended August 1, 1928.
(See Table 6.)

TABLE 6.—THE CONSUMPTION AND CARRY-OVER OF AMERICAN COTTON IN THE UNITED STATES, BY STAPLE LENGTHS

Staple Length (inches)	Consumption ¹	Carry-over ²	Consumption	Carry-Over
	<i>Bales</i>	<i>Bales</i>	<i>Per Cent</i>	<i>Per Cent</i>
Total	6,534,946	2,421,113	100.00	100.00
13/16 and under	93,842	87,648	1.44	3.62
7/8	1,878,201	484,107	28.74	20.00
15/16	1,782,817	425,953	27.28	17.59
1 and 1 1/32	1,854,915	658,556	28.38	27.20
1 1/16 and 1 3/32	372,208	267,962	5.70	11.07
1 1/8 and 1 5/32	273,404	286,671	4.18	11.84
1 3/16 and 1 7/32	251,691	156,660	3.85	6.47
1 1/4 and over	27,868	53,556	0.43	2.21

¹ Based on the report on the consumption of cotton by domestic mills for year ended July 31, 1928. U.S.D.A., Bureau of Agricultural Economics, Division of Cotton Marketing. (Does not include foreign cottons.)

² Based on estimate of the grades and staple lengths of the cotton in the Carry-Over in the United States on August 1, 1928. U.S.D.A., Bureau of Agricultural Economics, Division of Cotton Marketing. (Does Not include foreign cottons.)

This report shows that about 84 per cent of all domestic mill consumption last year consisted of about equal parts of 7/8 inch, 15/16 inch, and 1 to 1-1/32 inch cotton. Obviously, we are producing the short staples, especially 7/8 inch and under, out of all proportion to domestic mill consumption. Moreover, it is apparent that we are producing too little 1 inch to 1-1/32 inch cotton.

Quality and Our Foreign Trade

Now, how is this shift in production towards inferior staple affecting foreign consumption of American cotton?

Although we have no accurate figures showing the grades and staples consumed by foreign mills, there is some evidence that our foreign takings are shifting from the medium-staple to the short-staple markets. In others words, it appears that we are gradually losing business among the spinners of medium to fine yarns and gaining business among the coarse-yarn spinners of the world. This new business is, of course, appreciated since we have short staples to sell. But are we not, in effect, exchanging a larger income per bale for a smaller one?

Corroborative evidence of our shift toward the production and marketing of short staples comes from the figures showing the consumption of all growths of cotton by British mills from 1919-20 to 1927-28, inclusive. These are significant, in part because Great Britain is the world's leading spinner of medium-to-fine yarns, and in part because it was chiefly Great Britain's takings of our cotton in the early days that enabled us to establish ourselves as the world's leading cotton growing country. During the period mentioned, British mill consumption of all growths has dropped off approximately 700,000 bales. Contrast with this decline in British mill consumption the fact that, during the same period, her consumption of American cotton alone has fallen off more than 1,000,000 bales. Contrast also the further fact that, at the same time, British mill consumption of all cottons other than ours has actually increased more than 300,000 bales.

In the meantime we have produced our usual proportion of the total world's consumption, but have been able to do so only by increasing our sales somewhat on the Continent of Europe and materially among the short-staple spinning countries of both Southern Europe and Asia—notably Japan, and even including China and India.

Yet this is only a small part of the story. In this downward shift of staple lengths, we are getting out of our early-day position of no competition into one which we are breeding foreign competition for practically every bale that we grow. For example, we are now competing directly with the cheaply-produced short staples of India to the extent of three to four million bales per annum. Moreover, we are

hazarding our future income by neglecting to furnish the world with adequate supplies of the medium lengths. In this neglect we are inviting other countries to grow them.

A significant fact to be considered in this connection is that sundry foreign countries—India and Egypt excluded—which in 1919-20 were producing about 20 per cent of the world's supply of cotton, had by 1927-28 increased their production by an amount variously estimated as from 1 million to more than 2 million bales of 478 pounds each. Meantime we, who produce more than 50 per cent of the world's supply, have increased our production only a little more than 1 million bales above our production in 1919-20. This means that the minor cotton-growing countries of the world are encroaching upon our production of the medium lengths, and doing so much faster than we have thought.

In addition to gathering the data and issuing the reports previously mentioned, showing inventories of the grade, staple length, and tenderability of the American cotton crop and the cotton consumed by domestic mills, the Bureau of Agricultural Economics, is developing projects and the necessary methods and equipments for determining and measuring those physical properties of cotton fibers which contribute to their spinning utility. The facts to be gained in this manner, when used in connection with the official standards for American cotton, will serve as a basis for the more accurate measurement of both the quantity and quality of American cotton produced and consumed from year to year.

Quality and Progress

The situation might appear less encouraging were it not for certain indications of progress both in getting better cotton grown and in selling it on the basis of quality. There is a ray of hope, for example, in the fact that "point" buying in which quality is largely disregarded may eventually be supplanted by a better plan of trading on the basis of the grade and staple quality of the farmer's bales. During the past year, the cooperative cotton marketing associations have sold on a quality basis nearly 900,000 bales for their farmer members, in even-running lots to merchants and spinners.

Support of this idea of selling on a quality basis also comes from the cotton merchants of the country. Mr. Henry G. Safford, formerly President of the Texas Cotton [Merchants] Association, in his address at Galveston, Texas, on March 23, 1928, said: "The buying of 'point' cotton is no longer safe for us (meaning the merchants) nor just to the grower, on account of mixture of seed and poor methods, making lots always mixed in staple." This Association of which Mr. Safford was President, is cooperating with the Texas Cotton Committee, an organization composed of growers, merchants, and research workers, the purposes of which are to improve the yield and quality of Texas cotton and to promote its sale on a quality basis.

This movement, however, is not confined to Texas. In North Carolina, South Carolina, Georgia, and several other cotton States, the growers, aided by agricultural colleges and extension services, have programs discouraging the production of cotton 7/8 of an inch and under and encouraging that of cotton 15/16 of an inch or better in length. Decided improvement has been made in the staples produced in New Mexico, Arizona, and California, and headway is being made in its sale on a quality basis.

Many local buyers are also active. "Can't blame the farmer for planting any old seed that will come up so long as he can take it to the gin and get the same price as for good cotton." This is the way a progressive buyer, of Lubbock, Texas, summarizes the situation. It is characteristic of the viewpoint of thousands of cotton buyers throughout the Cotton Belt, several hundreds of whom are cooperating with the Division of Cotton Marketing and the State agricultural experiment stations in bringing together sufficient data to convince the world of the fallacy of trading in cotton the way trading is carried on in our local markets.

Obviously, the present status of cotton culture and marketing in the United States is not the result of any well-designed plan. Like Topsy, it "just grewed." Nearly 140 years old and yet still young, it is suffering chiefly from growing-pains rather than from the infirmities of old age. It now appears that within a few years we shall have brought together a sufficient body of facts to enable us to

check up on the relation of the several qualities of American cotton in the supply to their respective values and prices. It appears, further, that the information thus derived may in turn suggest a rational program of readjustment of cotton growing and marketing in the United States to the requirements of world demand.

Though a momentous one, the task is by no means beyond the capacity of our country to remove obstacles from the path leading to progress. It is one in which scientific research in alignment with business ability must set aside methods and customs which are hoary with age and replace them with the practices of a "going concern."

More specifically, if we as a Nation are to make the most of our resources in cotton, certain essentials to success can not be overlooked. We, must for example, take stock of the productivity of our Cotton Belt soils. We must learn the relation of soil types, soil fertility, and the fertilizers used, to the quality of cotton, as well as to yield. Our farms must be terraced and our soils improved so as to secure the best combinations of yields and quality consistent with net returns. All this involves further researches.

We must learn from the spinning mills and other consumers of raw cotton and from our cotton fiber and spinning research laboratories, the kinds of cotton which best serve the spinners' purposes, and, from related market studies, we must learn the relative demand for each.

DISCUSSION BY G. L. CRAWFORD

BUREAU OF AGRICULTURAL ECONOMICS

Dr. Youngblood's paper deals with the question of the quality of cotton in relation to price. I shall limit my remarks to the proposition that quality is usually disregarded in the local markets and that for this reason the farmer has no adequate incentive to produce good cotton, or cotton of better spinning qualities.

The data from which I shall draw my conclusions are based in part upon Texas Agricultural Experiment Station Bulletin No. 383, "Relation of Farm Price to Quality of Cotton," but in the main upon unpublished data secured by Mr. L. P. Gabbard of the Texas Agricultural Experiment Station and the writer. This discussion will be confined to two typical farmers' markets for the season 1927-28. One market, at Henderson, Texas, is located in a rolling to hilly region of thin sandy to sandy loam soil. In this region, about two and a half million acres are planted to cotton each year.

The other market is at Hillsboro, Texas, almost in the middle of the fertile Black Land region, extending north from northeast to southwest about four hundred miles and averaging about thirty miles wide. In this region from 4,250,000 to 4,500,000 acres are planted to cotton annually.

The Texas Agricultural Experiment Station placed a field man at each of these points at the beginning of the ginning season, or about August 15, 1927. These men collected from five to twenty representative samples of cotton each day, obtaining from the grower the price received for the bale from which it was drawn. Later, these samples were classed for grade and staple length by cotton classers from the Division of Cotton Marketing, Bureau of Agricultural Economics. At the end of the season, all data were brought together, showing the date of sale, the grade, and the staple length of each sample thus drawn from a farmer's bale. A report of the results of this study is now in the process of preparation and will be published later.

I should like to call your attention to the incompatibility of the daily prices for the months of September and October. Cotton is classed in two ways—for grade and for staple length. I will give results of both as they relate to price in the farmers' markets. Attention however is called to the fact that from an economic standpoint staple is of greater significance than grade. Grade is a matter of cleanliness, brightness and condition of staple. Staple length has to do with the quality of goods for which it is suited. Relationships existing between both grade and staple length and prices paid, however, are here presented.

On September 9, at Henderson, Texas, a bale of Strict Middling cotton 12/16 of an inch in staple length sold for 22.40 cents per pound; a bale of the same grade and 1/16 of an inch longer sold for 21.85 cents per pound on the same date; and another bale of Middling 14/16, or an additional sixteenth of an inch longer, sold for 22 cents per pound.

Again, on September 29, at Henderson, three bales of Middling cotton 12/16, 13/16, and 14/16 of an inch in staple length, sold for 21, 19.95, and 20.65 cents per pound respectively.

In other words, three bales of cotton sold in the same market on the same day at prices which tended to decrease as staple length increased.

On September 20, at Hillsboro, three bales of Strict Middling 14/16, 15/16, and 1 inch in staple length sold for 20.25, 20.25, and 20.10 respectively. Again it is noted that prices tended to decrease as quality improved.

On October 6, at Hillsboro, three bales of Middling, 14/16, 15/16, and 1 inch in staple length sold for 20, 19.60, and 20.10 cents per pound respectively. In other words, the 15/16-inch staple brought less than the 14/16, and the 1-inch staple brought only ten points more than the bale of shortest length.

Many other examples might be given, but these will suffice.

Contrast with this chaotic situation in the local market the fact that, as shown by the tables presented in Dr. Youngblood's paper, definite premiums are paid for better grades and staple lengths in both the central and the spinners' markets. Available data showing average prices received for bales of like grades and staple lengths selling in each of these markets on given dates further illustrate the same tendencies.

At Henderson, Texas, the average prices for the month of September showed the following inconsistencies: Middling 12/16 averaged 20.61 cents, while Strict Low Middling of the same staple length brought only 20.75 cents per pound. During this month the average price at the Houston central market was approximately 100 points off Middling for Strict Low Middling. Again, during the same month and on the same market, Strict Middling 13/16 averaged 21.37, while Strict Low Middling of the same length sold for 21.35 cents, or was given practically no recognition for grade.

It is unnecessary to present the corresponding data for October because the results were practically the same. The prices of Strict Middling, 12/16 and 14/16, were 21.49 and 21.50 cents per pound, practically the same as in September. On the same date in the Houston central market, 14/16 would bring 50 points, or \$2.50 more a bale than cotton of a shorter staple but of the same grade.

At Henderson during October Middling cotton 13/16 averaged 20.90 cents per pound, whereas Middling 14/16 sold for 20.40. In other words, the shorter staple sold for 50 points above the longer, whereas the central market price was just the reverse, or 50 points more for the longer staple.

Similar results were also obtained at Hillsboro for the month of October. The price of Middling 14/16 and 15/16 averaged 20.24 and 20.21 cents per pound respectively.

Further data are also available showing that, notwithstanding this consistent disregard for quality in the local markets, the prices paid vary more or less directly with the average qualities of cotton sold on these markets. Data might also have been presented showing that in different markets on the same date, cotton of the same grade and staple length will vary somewhat in price according to what spinners call "character."

My further conclusion is that the unorganized local cotton markets rather effectively kill all incentive that a farmer may have to produce cotton of superior spinning utility. The question of the proper recognition of quality in our local markets is one of the fundamental problems with which we have to deal in cotton production and marketing.

RELATION OF THE PRICE AND QUALITY OF COTTON

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The price of cotton is made in two parts. The first and most important is the price level of cotton. It is made in the futures market, the clearing-house for demand and supply factors. The spot cotton markets operate on the assumption that the futures price expresses the true price level of cotton and they base their operations on it. The second part of the price, the "basis," is made in the spot markets, primarily the centralizing or merchants' markets as a clearing-house for information on spinner demand and relative supply of classes offered by growers.

In the futures market the total supply and demand are the effective price-determining factors. In the basis markets the important consideration is the relative supply of the different qualities. The qualities of cotton are competitive in inverse ratio to their distance apart, i.e., the contiguous grades and staple lengths are more competitive than those on the extremes such as Middling Fair and Good Ordinary.

Operation of the Basis Market

The "basis" as used in the trade means a sale or a purchase of a specific quantity and quality of cotton at so many points (hundredths of one cent per lb.) "on" or "off" the price of futures for a specified month's delivery in a named futures market, the cotton to be delivered on specified terms on a given date at a designated place. The contract may call for immediate delivery or shipment, or the delivery date may be distant a year or more. These basis trades do not call for transactions in the futures market until the price is fixed. The first point I wish to make is that the volume of transactions in the basis markets is not timed with the volume of trading in futures. The sec-

This paper was read at the nineteenth annual meeting of the American Farm Economic Association, at Chicago, Illinois, December, 1928.

ond point is that a large percentage of the basis transactions are often made in the spring and summer before the quality of the crop out of which deliveries must be made is determined. The third point is, that as a result of the methods of marketing, the sales by quality are sometimes not in proportion to the qualities produced. In the late fall of 1927, for example, the low grades were relatively oversold and under-produced. Comparatively they brought more money than they should have. For a time buyers offered the same price for Strict Low Middling as for Middling, the next grade above. It is impossible to expect the qualities of cotton to sell always either on their relative spinning value or on their relative supply.

Quality Characteristics Which Cause Price Differences

A complete classification of the world's cotton crops according to all quality characteristics would make an almost innumerable array. For the last 125 years those interested in the cotton trade have been developing standard descriptions for the qualities of cotton. Three of these qualities grade, color and staple length are now represented in standard types or recognized descriptions for American cotton. The possible classes based on these three qualities amount to nearly 1,200. If the Government should standardize what is known as character it would theoretically multiply the already large number of possible classes by as many times as there are number of character descriptions.

The descriptions of American cotton do not apply to Indian, Egyptian, or other growths of cotton. In fact, cotton with exactly the same class according to official Government standards, but from different parts of the cotton belt of the United States may bring different prices because of differences in quality. The difference may lie in uniformity of the length of the fibres, in their spirality, in diameter, or in other characteristics. Obviously to make a separate classification to cover each of these separately would carry classification to an absurdity. On the other hand, it is well known that what is called Texas cotton, often sold merely as a Texas bill of lading, has, or has had, a value equal to from 50 to 75 points premium over eastern-belt cotton of

the same grade and staple length because of these more or less indefinable characteristics. This may be due to water supply, climate, soil, or other environmental factors in the growth of the cotton, or the seed stocks or both. The point is the region of growth may give rise to value characteristics.

Variety designation is another important way of classifying cotton which is not exactly comprehended in the classifications already given. This method of distinguishing cotton values is especially important when dealing with Indian and Egyptian cottons. Prices of Indian cotton are quoted at so much for No. 1 Ohmra or No. 1 Punjab American or grades of each of the other commercial varieties.

It is evident, therefore, that a complete grouping of all cotton according to value characteristics would require a very large number of classes. The remainder of this discussion will relate to grade value of American cotton.

Grade as a Value Factor

The grade of cotton is a value factor in several ways. Grade, according to the U. S. Dept. of Agriculture, is determined by the amount of foreign material in it and the physical condition of the cotton. Foreign material means trash, neps, dirt and other foreign matter. Physical condition refers to the gin preparation such as rough-ginned or gin-cut, or whether by exposure or otherwise the fibre, or staple, is weak, immature, perished, or mixed, or otherwise damaged.

The most significant way in which grade enters into value is as it effects the weight outturn of yarn per pound of raw cotton. According to tests made by the U. S. Dept. of Agriculture the percentages of waste for the different grades of the Universal Standards for white cotton were as shown in the table on the following page.

According to these figures it is evident that weight outturn of yarn is not the only factor determining the relative values of grades. The most striking fact is that the further away from Middling in either direction the less important the weight outturn of yarn becomes. In the case of Strict Middling weight accounts for over 65 per cent of the com-

Grade	Waste per cent	Yarn weight	Relative value Middling 100	Differences based on yarn out- turn and average prices New Orleans 1922-1928	Average Commercial Differences Years 1922-1928
No. 1 Middling Fair.....	5.50	94.50	102.16	on 47	on 126.96
No. 2 Strict Good Middling....	5.49	94.51	102.16	47	99.63
No. 3 Good Middling.....	6.02	93.98	101.59	36	72.21
No. 4 Strict Middling.....	6.26	93.74	101.33	30	45.77
No. 5 Middling.....	7.49	92.51	100	0	0
No. 6 Strict Low Middling.....	8.08	91.92	99.36	off 14	off 77.24
No. 7 Low Middling.....	10.36	89.64	96.89	68	176.51
No. 8 Strict Good Ordinary.....	11.86	88.14	95.28	73	287.96
No. 9 Good Ordinary.....	14.44	85.56	92.49	164	391.49

mercial differences, whereas in Middling Fair it accounts for only 37 per cent of the commercial value. A like variation holds for grades below Middling except that Strict Low Middling is out of line.

Perhaps the other most significant factor in determining the relative price of grades is the per pound price of the yarn. Unfortunately the prices of yarn are not quoted in terms of the grade of cotton from which they are manufactured. Another important factor which is measurable in terms of cost of production is the number of breakages caused by different grades. Those figures are not available now but may be soon.

Frequency of Price Changes in Basis Market

There are comparatively few fluctuations in grade differences during the course of a year. For example during the first 11 months of the calendar year 1928 the total number of changes in the average grade differences was only 8 for Strict Middling. All markets do not change at the same time and a change in any one of the ten markets averaged in making the official differences causes a change in the average. Thus the actual number of changes for any grade in any one market rarely runs more than three or four in any one year. For some of the grades an entire year may pass without a change. The low grades tend to change in price more often than high grades. In the first 11 months of 1928 the average difference for Low Middling changed 26 times compared with 11 times for Middling Fair, the best grade.

Changes in the Price Level and Grade Differences

The price of futures changes every day and Middling spots nearly every day in every market. Theoretically a significant change in the price level of cotton as expressed in futures should cause a corresponding percentage change in grade differences if the price of one greatly influences the price of the other. In March 1920 Strict Middling was 125 "on" Middling when Middling was quoted at 41 cents. In February 1921 Strict Middling was still 125 "on" Middling but Middling was selling at 11.50 cents. In June, 1921, the difference for Strict Middling in New Orleans was narrowed to 50 points on Middling. It was in that month the price of Middling reached its lowest point, 10.25 cents. The price of Strict Middling remained 50 "on" in New Orleans until October 1922 when it was lowered to 38 points "on." In the meantime the price of Middling had gone up from 10.25 cents to 23 cents. The difference was still further reduced to only 25 points "on" Middling in November and the price of Middling went above 25 cents. The price of differences for the other grades above or below Middling behave in the same way as Strict Middling. It is evident therefore, that the factors which determine the price level of cotton do not necessarily affect grade differences.

Size of the Crop and Grade Differences

The yearly sums of the average grade differences for the last seven years indicate that there is little or no relation between the size of the crop and the grade differences. The widest differences in the period occurred in 1926 with the largest crop on record. The next widest differences occurred in the year 1924 when the size of the crop was less than average. During the last seven years the production in four years has been above the average. During two of those four years differences were wider than average but in one of them the differences were the narrowest for the seven years.

The differences for grades above Middling and grades below Middling change in the opposite direction. In the case of a high-grade crop all differences narrow, whereas in a low grade crop all differences widen.

It is usually said it is impossible to hedge the basis. Technically it is so, of course, but, with the proper proportioning of sales of grades above and below Middling, risks due to changes in grade differences can be largely offset and the same results as a hedge secured. For example, according to average commercial differences it takes approximately 175 bales of Strict Middling to offset grade difference changes in 100 bales of Strict Low Middling. On the other hand, the changes in Good Middling approximately offset Strict Low Middling bale for bale. Similar offsets may be worked out for all the grades.

It may be impracticable for the buyer to work out these offsets to a nicety but he can at least proportion his forward sales on grades above and below middling and secure a measure of protection from violent fluctuations in grade differences.

Distribution of Grade Differences

It has been shown that the centralizing spot markets, the cotton merchant's markets are the price-making centers for differences in quality. How successful is the present marketing machinery in distributing these grade differences to the spinners on one side and cotton growers on the other?

There is little doubt but that on an average the differences prevailing in the central spot markets are reflected in the spinners' market in spinners purchases. The fact is that every spinner of any consequence can and does get basis quotations from every centralizing market in the world at any time if he is uncertain as to the correctness of any price quoted, and thinks other quotations will be of advantage to him.

Bremen is primarily a merchants' market but the Bremen official differences apply on spinners' arbitrations and all sales to spinners in Germany are sold on Bremen arbitration. The following comparison of grade premiums in Bremen and the average of the ten United States spot markets shows that differences carry through. During the calendar year 1926, the premium for Strict Middling in Bremen averaged 55 points on Middling and the average for the ten designated spot markets in the United States averaged 51 points on middling spots. During the same year

the average difference in Bremen for Strict Low Middling was 116 points off Middling and in the ten markets in the United States 120 points off Middling.

Point Buying

How successful is competition in carrying the premiums for the good grades and discounts for the lower ones to the local market and the individual farmers in local markets? Owing to the method of trading in local markets this question must be answered in two parts.

The farmers are not able to class their cotton accurately and a large percentage of the local buyers are not able to do so. Bargaining is done in horse-trading fashion on price and not on quality. In all local markets of consequence two or more merchants in the central markets have local representation. The merchants watch the receipts from each point and adjust the basis price to meet average receipts. Competition is thus based on average receipts. The figures available indicate that on an average the cotton from each local market brings approximately its correct value. In a recent study I have made of ten markets by sample, I find as wide difference as 200 points net between markets. These differences are due primarily to staple length rather than to grade. The fact is point buying can be made to cover grade differences fairly well, but not staple differences.

Lack of Discriminating Buying

In the small markets each farmer tends to be paid the basis price for the market and not according to the quality of his cotton. Those who have poor quality cotton get more than its true value and those with cotton of a quality above the average have to sell it for less than its value. This encourages careless harvesting, ginning and handling and it emphasizes quantity rather than quality production. High-yielding short-staple varieties tend to supplant the longer staple varieties.

The situation may be remedied in one of three ways. (1) The most promising seems to be the tendency toward buying on grade and staple differences in local markets. This is gradually being accomplished through the tendency

to eliminate the smaller markets and through concentration of the business in larger ones which creates enough business to pay a real classer to buy there. In some instances good roads have made it possible for a buyer to buy in two or more markets. (2) Community production tends to make point buying more just and it intensifies competition. It also makes the purchase on grade and staple differences easier. The best feature about this method is that it not only tends to distribute premiums and discounts properly but is a positive step of great merit in a program of improvement. (3) Cooperative marketing either locally or through a state-wide association may bring about an equitable distribution. The promoters of this method also promote the production of better cotton.

THE FARMER'S INTEREST IN VARIOUS TYPES OF ROADS, AND ITS BEARING ON FINANCING ROAD BUILDING

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The past twenty years have seen the re-emergence of highway transportation from a position of comparative unimportance to a place of major importance in our national system of transportation. Of the 29,500,000 motor vehicles registered in the world, 79 per cent are owned and operated in the United States. The registration of 23,500,000 motor vehicles in the United States in 1927, compared with 5,000,000 in 1917, illustrates the rapid increase of motor vehicle ownership and a corresponding increase of motor vehicle traffic on the highways of the country. The public demand for highway improvements by the owners of motor vehicles explains the sharp increase of public expenditures for highway development during the past ten years, until highway costs have become one of the major items of public expenditure. In 1926 highway expenditures in the United States were \$1,300,000,000, one-half of which was used for improvement of State highways and the remainder for local roads; in 1917 total highway expenditures amounted to \$232,600,000, of which \$47,300,000 was expended on State highways and \$185,300,000 on county and local roads.

Highway systems should provide satisfactory transportation service for the movement of people and commodities by the most direct practicable routes between the various sources of traffic in a given area. The expenditure of public funds for the improvement of the several classes of highways should be based primarily on the traffic that now travels and, in the future, is expected to travel, on State, county and township roads.

There is no fundamental difference in principle between the public business of developing systems of highways and

This paper was read at the nineteenth annual meeting of the American Farm Economic Association, at Chicago, Illinois, December, 1928.

private or quasi-public enterprises engaged in producing commodities. Both classes of industries supply their commodities based on the demand market. The outstanding difference is that private or quasi-public industries regulate their capital expansion and production on demand as determined by factual analysis, whereas the highway industry has neglected this type of analysis, upon which should be based its capital investment program.

The same basic economic and engineering principles of management that control in the field of private and quasi-public business should also govern the public business of financing and constructing highway systems.

The first basic principle of highway production management is that the improvement of each of the four groups of highway systems, National, State, county and township roads, should follow an established plan of development in which the improvement of various sections of each highway system, the character of the improvement, and the investment of public funds in each improvement project should be based on present and expected future traffic use, modified by the various physical and engineering factors which frequently determine the selection of specific types of construction. The building of a concrete, brick or equivalent high-type surface on highways which will not, under average conditions, carry approximately 1,500 or more vehicles per day within fifteen years of the period of improvement, is an unsound investment of public funds and an unnecessary burden on the sources of highway income, which defers the early improvement of other sections of the highway system.

A policy of over-development of a highway system is more dangerous than a conservative improvement policy based on the stage-construction principle. More attention should be directed to the formulation of effective legislative policies which will scientifically control the determination of highways requiring improvement, their location, type of construction, and equitable methods of financing highway improvements by State, county and local highway authorities.

The second basic principle of highway management is the

establishment of a highway budget, which involves the determination of the amount of funds necessary to scientifically improve the four road systems over a definite period of years, of the annual funds required, and of an equitable distribution of the cost of the improvement program among the sources of highway income.

If we can accept the rate of expenditure for highway improvements during the past ten years, (total expenditures have increased slightly during the past four years), as an indication of the trend of expenditures for the next decade, the outstanding criticism, in my judgment, of present highway policies is not, primarily, the amount of public funds disbursed for highway improvements or the distribution of their cost among the several sources of income, but the fact that State and county highway departments have no established plan of highway improvement, based on traffic and engineering facts, to guide the investment of public funds in the improvement of highway systems. Frequent changes in the executive personnel responsible for directing the improvement of State and county highway systems is partially responsible for this situation, and results in the lack of a continuous policy of improvement and, in many cases, an unsound investment of highway funds.

There is no satisfactory reason why State and county highway departments cannot establish a definite plan of improvement, based on traffic and engineering facts, for periods of at least five years and preferably for ten years. Such a plan will insure continuity of development, the improvement of routes in the order of their traffic importance, the elimination of political influence, which in many cases dictates the betterment of a highway or a section of a highway, the expenditure of public funds on projects which should be completed first, and the prevention of either overdevelopment or underdevelopment of a highway or a section of a highway system.

Comparatively few States and a limited number of the more important counties of the country have established definite programs of highway improvement over a period of years, developed from traffic and engineering facts, and are appropriating funds, based on a highway budget, to complete the established plan of improvement.

We have passed the period in highway development when individual judgment, political pressure, or any factors other than traffic, engineering and financial facts, should be accepted as a basis of determining highway betterments. The facts which should guide the establishment of a program of improvement can be ascertained at comparatively small cost, and the various jurisdictions responsible for highway improvements should be required to establish a definite program prior to the appropriation of funds.

The absence of a definite plan is particularly serious in the congested traffic areas surrounding centers of population. In the regional traffic areas of New York, Philadelphia, Chicago, Cleveland, and the larger centers of population, are found the greatest density of traffic and the most serious congestion sections on the principal traffic routes, as well as the most difficult and expensive highway engineering problems that require immediate solution to provide efficient and safe highway transportation. The complicated highway and traffic problems in these areas include the location and construction of new arterial routes; acquisition of new, and widening of existing highway right of way; widening of present road and street surfaces; new bridges and the reconstruction and widening of existing structures; double-deck roadways; grade separations at both railroad and highway intersections; parking lanes; vehicle storage areas off the traveled way; preservation of right of way for future highway developments; building set-back lines; traffic control and safety; distribution of the cost of the several classes of improvement; and other problems that challenge the traffic engineer, highway officials, economists, and the public. The attention devoted by economists to problems of highway development, planning, and financing, has not been at all commensurate with the importance of these problems in the fields of public finance, transportation, and agricultural economics.

Motor vehicle traffic facts from the highway transportation and planning surveys completed by the United States Bureau of Public Roads in co-operation with the several State and county highway departments in California, Connecticut, Maine, New Hampshire, Ohio, Pennsylvania, Tennessee, Vermont and in the Chicago and Cleveland Regional

Areas show that traffic use and distribution on the highways of the several States have similar characteristics, the more important being as follows:

1. The yearly increase of traffic on the rural highways of the several States is measured by the yearly increase of motor vehicle registration. Highway traffic and motor vehicle registration in Connecticut, Massachusetts, Maryland, Maine, Michigan, New Hampshire, Ohio, Vermont, and Wisconsin have increased at approximately equal rates. The variations in industrial and agricultural development, in motor vehicle ownership, in population, and in the period of the series in each State, apparently, have had no effect upon the relationship between the rates of traffic increase on the highways and motor vehicle registration growth.¹

2. The greatest daily density of traffic is found on the highways adjacent to centers of population and motor vehicle ownership, and this traffic is predominantly local in character. Of the 11,000 miles of the State Highway System of Ohio, 858 miles, 7.8 per cent of the mileage, carried 1,500 or more motor vehicles per mile per day, and 7,761 miles, 70.6 per cent, carried less than 600 vehicles per day, of which 4,180 miles carried less than 200 vehicles per day. Of the 1,264 miles of National, State and county roads in the Cleveland Regional Area, only 20 miles, 1.6 per cent of the total mileage, carried 10,000 or more vehicles per mile per day; 365 miles, 28.9 per cent, 1,800 or more vehicles; and 569 miles, 45.0 per cent of the mileage, carried less than 700 vehicles per day.²

3. Motor truck transportation on rural highway systems averages 10.0 per cent of total traffic.

4. Daily motor truck traffic is small in volume on a large mileage of the rural highway system, and the daily volume of large-capacity trucks is an unimportant part of total traffic. On the Ohio State Highway System, 7,981 miles, 72.5 per cent of the mileage, carried less than 60 trucks per day, of which 5,305 miles, 48.2 per cent, carried less than 30 trucks per mile per 24-hour day. Of the 11,000 miles of State highways in Ohio, 10,289 miles carried less

¹ Report of a Survey of Transportation on the State Highway System of Connecticut, 1926; New Hampshire, 1927; Ohio, 1927; Vermont, 1927; Pennsylvania, 1928.

² Report of a Survey of Highway Traffic and Planning on the highways of the Cleveland, Ohio, Regional Area 1928.

than fifteen 3 to 7½ ton trucks per mile per day, while only 94 miles carried forty or more trucks of 3 to 7½ tons capacity. On the Connecticut State Highway System, 79.2 per cent of the motor trucks are of ½ to 2½ tons capacity and only 11.7 per cent of 5 to 7½ tons capacity.

5. Two-thirds of the passenger car trips are less than 60 miles, and three-fourths of the motor truck trips are less than 30 miles.

6. Long distance traffic is small in volume, and the facts supporting the improvement of rural highway systems clearly show that local traffic comprises a large percentage of total traffic on all highway systems, except on the highways of a comparatively few important tourist areas.

The improvement of highways in the Cleveland Regional Area is primarily for the benefit of, and necessitated by, the volume of local traffic. On fifteen main routes in Cuyahoga County, only 2.4 per cent of the passenger-car traffic crossed the county between points outside of Cuyahoga County, and only 1.5 per cent traveled across the regional area. These facts illustrate the lack of importance of through traffic in areas adjacent to large centers of population. On the 11,000 miles of the Ohio State Highway System, 10.2 per cent of the daily passenger-car use was by vehicles owned outside of Ohio, while on the 1,454 miles of the New Hampshire State Highway System over 50.0 per cent of the total traffic consisted of foreign vehicles.³

7. Of the total traffic on rural highway systems, approximately 80.0 per cent of the traffic travels on the State highway system, which averages 10.0 per cent of the total rural mileage among the several States. Of the 3,487,210,000 annual vehicle miles on the rural highway system of Pennsylvania in 1924, 68.3 per cent operated on State highways, which comprise 11.0 per cent of the 95,194 miles of rural roads, and 31.7 per cent of the use was on the county and township roads, comprising 89.0 per cent of the rural highway mileage. The average daily density of traffic per mile on the rural highway systems of Pennsylvania was 635 on

³Report of a Survey of Transportation on the State Highways of New Hampshire, 1927.

the State system, 306 on county highways, and 29 on township roads.⁴

Of the 3,746,360,000 annual vehicle miles on the Ohio rural highway system, 57.7 per cent was on the 11,000 miles of the State highway system, 13.0 per cent of the 84,884 miles of the Ohio rural highways; 29.6 per cent on the county highway system, 27.1 per cent of the mileage; and 12.7 per cent on the township system, 59.9 per cent of the total rural mileage. The average daily density of traffic per mile on the rural highway systems of Ohio was 538 on State highways, 132 on county highways and 26 on township roads.

8. Traffic on the rural highway system is predominantly that of city-owned passenger cars and motor trucks. On the New Hampshire State Highway System 6.1 per cent of the use consisted of farm-owned vehicles and the average trip was 13 miles; in Ohio 12.4 per cent of the traffic, the average trip 12 miles; in Pennsylvania 7.1 per cent, the average trip 26 miles; and in Vermont 10.1 per cent, the average trip 12 miles.

Of the 23,500,000 motor vehicles registered in the United States in 1927, 5,000,000 were farm owned vehicles. Although approximately one-fifth of the motor vehicles are farm-owned vehicles, they are distributed over a considerably larger area than city-owned vehicles, and their use on the highway is less concentrated.

9. On rural highway systems, based on present and expected future traffic during the next fifteen years, the construction of surfaces in excess of a width sufficient for two lanes of traffic, preferably 20 feet, is unnecessary, except on a very small mileage of the State system adjacent to the larger centers of population, and on a few of the major traffic routes connecting the larger cities of the country. A corollary of this general rule is that the present acquisition of highway right of way in excess of 60 feet, under normal conditions, is unwarranted on the State highway system, except in a few areas of dense traffic. With respect to the protection of right of way for future highway

⁴Report of a Survey of Highway Traffic on the Pennsylvania State Highway System, 1928.

use, it is a more economical policy for the State to establish building set-back lines rather than to acquire right of way in excess of 60 feet, since the acquisition of additional width for future use usually requires an outlay of public funds, takes rural land out of production, and involves the State in maintenance expenditures for the additional unused right of way.

10. Rural highway systems, beyond the zone of traffic influence of large cities, on an average thirty miles, do not and will not in the future carry large daily volumes of traffic. On the Ohio State Highway System only 131 miles carried 2,500 or more vehicles per mile per day in 1925, 858 miles 1,500 or more, and 4,180 miles 200 or less vehicles per mile per day. Only 24.0 per cent of the State highway mileage of Ohio required construction of concrete, brick, or equivalent types of improvement in 1925. During the period of the next fifteen years approximately 5.0 per cent of the total rural mileage of the country will require major types of paved surfaces to satisfactorily serve traffic.

11. Manufactured products constitute the largest percentage of goods hauled on rural highways. In Connecticut, manufactured products are 69.0 per cent of the total net tonnage; in Cook County, Illinois, 66.0 per cent; in Maine, 55.1 per cent; in New Hampshire, 52.1 per cent; in Ohio, 46.6 per cent; in Pennsylvania, 60.5 per cent; and in Vermont, 43.4 per cent. Products of agriculture, and animals, comprised 16.4 per cent of the total net tonnage hauled on rural highways in Connecticut, 18.7 per cent in Cook County, 15.0 per cent in Maine, 14.6 per cent in New Hampshire, 21.9 per cent in Ohio, 19.9 per cent in Pennsylvania, and 17.1 per cent in Vermont.

Farms contribute but a comparatively small part of total motor truck haulage in the several States. Of the several classes of origin of motor truck traffic, farms comprised only 7.5 per cent of the total loaded motor trucks on the highway system of Cook County, Illinois, 11.9 per cent in Maine, 5.5 per cent in New Hampshire, 12.7 per cent in Ohio, 7.8 per cent in Pennsylvania, and 11.1 per cent in Vermont.

The rural highway system of the United States comprises

four road systems, National, State, county and township roads. On January 1, 1927 the total mileage of rural roads was 3,000,190 miles, of which the National (Federal Aid) system was 186,227 miles, the State highway mileage, including the mileage of the National system, was 287,928 miles, and county and township roads 2,712,262 miles.

On State highway systems 56.6 per cent of the mileage was surfaced with sand-clay, topsoil, gravel, or paved types, and on county and township roads 14.3 per cent was similarly improved. Of the 2,712,262 miles of county and township highways, 387,005 miles were surfaced with sand-clay, topsoil, gravel or paved surfaces, 598,803 miles were improved to establish grade and drained, and 1,726,454 miles were unimproved or partly graded.

The improvement, in excess of a low-type "all-weather" road, of approximately 95.0 per cent of the rural highway mileage, which has no real traffic importance, cannot be supported from the viewpoint of either present and expected future traffic use, the influence of the improvement on farm marketing, or an increase in farm value resulting from highway improvements. It is difficult to visualize the improvement of a considerable percentage of county highways or township roads with a surface superior to a low-type "all-weather" road when traffic using these roads for a large part of the county mileage of the State of Ohio, a typical agricultural-industrial State, is less than 50 vehicles per mile per day, and on the township roads of the same State 29 vehicles per mile per day.

The improvement of established roads serving a farm territory has little influence on the value of rural land, compared with the major factors which establish the value of agricultural land. The approximate differentials in farm value between road types resulting from highway improvement in a Wisconsin dairy county is less than \$5.00 per acre for a concrete surface over a gravel surface, and less than \$3.00 per acre for a gravel surface over an earth road. Similar relationships were found in several Iowa counties. This small increment of value to farm land resulting from improved highways, if taxed to finance part of the cost of a highway improvement, requires the future replacement

of the highway improvement from other sources of income. For example, assume that a paved surface adds \$4.00 of value per acre to farm land within a one-mile zone on each side of the road. Assume further that this increase in value is absorbed by taxation to finance part of the total cost of the road improvement. Fifteen or twenty years later the road is worn out and must be replaced. Financing of any part of the replacement-costs should not be assessed against the same farm land, since the replaced surface adds no new value to the land.

Based on traffic use and the influence of highway improvements on land values in regional traffic zones and in rural areas, the following administrative control over highway systems and the financing of these systems is suggested.

1. *National and State Highway Systems.* These highways, as a general rule, comprise the important traffic routes of a State, and their improvement is caused primarily by city-owned motor vehicle traffic. The State should have complete control over the construction and maintenance of this system. Its improvement should be financed, primarily, from motor-vehicle license fees and gasoline taxation. A small contribution can be assessed against benefited property over a large part of the State highway system, and a larger percentage of the cost can be assessed for State highway improvements in the sub-urban areas surrounding centers of population.

2. *Regional Highway Systems.* Highway administration, construction and financing in the zones of traffic surrounding centers of population should be unified, including in this system the several counties which comprise the areas of regional traffic importance.

The financing of highway improvements in these areas should be a combination of motor-vehicle license fees, gasoline taxation, real-property taxation and special assessments on benefited property. Real property should contribute an equitable part of the cost of highway improvement, since the value of business, residential, or potential residential property, is materially influenced by the location and character of road betterments. The principle of de-

creasing influence of the road improvement on the value of abutting and zoned property adjacent to a highway improvement with increasing distance from the business center of these areas should be recognized in the distribution of special assessments.

3. *Rural Highway Systems.* Rural counties of similar characteristics should be consolidated for purposes of highway improvement. County lines are of no importance to traffic, and constitute artificial jurisdictional barriers. The grouping of counties into regional rural highway improvement areas will have the following practical results. Competent engineering personnel can be employed to direct the improvement program of areas larger than one rural county at a comparatively small cost for each county included in the rural regional area; modern road improvement equipment that is unwarranted in a low-traffic rural county can be purchased and used efficiently in a larger area, thus avoiding an unnecessary duplication of equipment among the several counties; the total capital outlay for road improvement and the cost of maintenance would undoubtedly be less than present expenditures, a better class of improvements would result from a consolidation into regional rural areas, and the highway improvement funds would be more wisely invested.

The financing of rural roads, excluding the State highway system, in these areas of low traffic should be based on a combination of State contribution and local property taxation. The allocation of State funds, admittedly, is not based on traffic use or on the registration of motor vehicles in these areas, both of which are small, but on the social subsidy theory, and on the taxation of real property on a general-benefit theory. The contribution of State funds carry with it the right to control the general engineering policies of improvement to insure proper expenditure of State funds and a satisfactory improvement of the rural road system.

DISCUSSION BY J. L. TENNANT¹

RHODE ISLAND STATE EXPERIMENT STATION

A number of specific facts regarding the farmer's interest in improved roads were obtained from replies to a questionnaire and from personal interviews with farmers. Location on hard-surfaced roads was considered to increase the value of the farm materially. Farmers' reasons for such enhancement of value center about market opportunities, decreased hauling costs, increased profits, and convenience. These reasons are inter-related.

The farmer on a paved road has a wider choice of markets than the farmer on a dirt road. Frequently he has three alternatives—delivery to a city market, selling to a buyer at the farm, or hauling to his railroad shipping point. The farmer on a dirt road is limited to his nearest shipping point or local market. Buyers call less frequently at farms on dirt roads. When the road is bad they do not call.

An improved road shortens the "distance" to market as trucks and automobiles can be driven at higher speed than on dirt roads. With motor transportation the distance to market is measured in hours and not in miles. A farmer on a hard-surfaced road 20 miles from market may be nearer that market in hours than a farmer on a dirt road only 3 or 4 miles distant. The effect of the hard-surfaced road in making available the larger city markets is very important to farmers in most parts of the state.

If prices are low in the fall, farmers on hard-surfaced roads can hold non-perishable crops and sell when prices rise. Farmers on dirt roads must sell in the fall or take the risk of not being able to move these crops to market even if prices rise later.

The hard-surfaced road provides a way of going to market any day during the year. Full loads can be hauled except for a day or two following a heavy snow storm. Farmers on dirt roads often find it necessary to transfer small loads at the junction of the dirt road with the hard-surfaced road, in order to have a fully loaded vehicle. Sometimes they may have to haul all the way with horses.

The farmer on a dirt road cannot plan ahead to do his hauling for he cannot depend upon road conditions. When the roads are bad hauling must be deferred. Often double equipment is necessary for trips to and from market when trucks cannot be used. Horses must be kept shod for this hauling.

He must draw crops to market when the roads are passable irrespective of the pressure of other work. A farmer on a hard-surfaced road hauls when it is convenient and can do hauling in wet weather if he wishes. On a dirt road rainy weather not only prevents field work on the farm but also interferes with hauling.

On hard-surfaced roads farmers can use their trucks more days per year. In a study in New York in 1923 it was found that farmers driving trucks on unimproved roads could not use them on the average for 8 weeks in the year. Farmers driving on hard-surfaced roads lost the use of their trucks

¹ In addition to these remarks, Mr. Tennant gave a large number of observations made during a survey of the use of roads in New York State in 1926 and 1927, the substance of which has been published in *FARM ECONOMICS*, (New York State College of Agriculture, Cornell University, Ithaca, N.Y.), July, 1927, pp. 729-736; and February, 1929, pp. 1048-1053. A bulletin has also been prepared.

for only 3 weeks. Replies from 446 farmers in 1927 indicated that the average time farmers on dirt roads could not haul full loads with trucks was 90 days per year. On hard-surfaced roads the average time full loads could not be hauled was only 40 days due to snow.

Farmers on hard-surfaced roads have more use of their automobiles and trucks. Farmers living on dirt roads used their trucks 725 miles less during the year than those living on hard-surfaced roads. This reduction in the number of miles driven is equivalent to 28 per cent of the use of trucks by farmers on hard-surfaced roads. The mileage that automobiles were driven by farmers living on dirt roads was 1100 miles less in a year on the average than that driven by farmers living on hard-surfaced roads. This is equivalent to three and one-half months of use by a farmer who lives on a hard-surfaced road.

A good road may permit changes in the type of farming which will increase the farm income. On a dairy farm the improved road may make it possible to sell market milk instead of cheese and butter.

In growing the more profitable cash crops—cabbage, potatoes, alfalfa, sweet corn, market peas, etc.—the farmer on a hard-surfaced road has a distinct advantage over the man living on a dirt road. When the crops are mature he can take them to market without having to think about the roads. He can decide upon the acreage of each crop which is adapted to his system of farming knowing he will not be handicapped in moving these crops to market. He can draw fertilizer and lime when other work is not pressing.

A different situation occurs on dirt roads. The acreage of each crop grown and sometimes the selection of the crops is governed partly by the quantity which can be drawn to market during the time available for hauling. Yields may be lowered on account of the use of less lime and fertilizer.

Where market milk is sold an all-the-year road permits the milk truck to maintain a regular schedule. On a dirt road mud in the spring and fall, and snow in the winter may make the road impassable for a truck. During such periods a farmer selling milk would have to haul it from his farm to a hard surfaced road or to the milk plant with horses. Dairy farmers on a dirt road are often prevented from doing winter dairying since they cannot depend upon the roads being good for hauling feed or hauling milk.

The farmer on a dirt road cannot always take advantage of car-door prices for feed and fertilizer because he cannot depend upon road conditions being favorable for hauling. When the roads are bad hauling must be deferred and a higher price per ton paid to cover the cost of extra handling and storage. He may go without lime or fertilizer or use smaller quantities than he would if hauling could be done any time. The farmer on the hard-surfaced road can buy a car of feed or fertilizer knowing he will have no trouble hauling it to his farm.

The maintenance and repair of motor vehicles is less when farmers use their automobiles and trucks on hard-surfaced roads. It has been found that the cost of operating trucks on dirt roads in good condition was 19 per cent to 26 per cent higher than on concrete and asphalt pavements.

The percentage of adult persons living on farms on hard-surfaced roads who were engaged in occupations other than farming was nearly twice what

it is on dirt roads. Farmers' sons and daughters work in town and live at home because they have the advantage of an all-the-year road. Farm boys and girls from homes on dirt roads, who obtain work in town usually have to live in town.

At the same time the number of farm workers per farm on hard-surfaced roads is higher than on dirt roads. On the average there were 5 adult persons per farm working at home on hard-surfaced roads, but only $4\frac{1}{3}$ on dirt roads. More people leave farms on dirt roads and fewer return to them.

A good road provides improved facilities for attendance at social gatherings and church. Medical attention is obtained more readily. Children can drive a considerable distance to high school and be home at night with little interference with regular attendance.

Mail is delivered more regularly to farmers living on hard-surfaced roads than to those on dirt roads. A large percentage of those living on improved roads have a mail route passing the farm.

Where the soil is fertile and the climate and topography are favorable to agriculture farmers should support plans for road improvement. The advantage of a hard-surfaced road indicates that they can afford to pay their share of the cost on the basis of use. It must be remembered that building an improved road through a section of abandoned farm land usually will not bring farmers back to such land and in any event will not make it a good farming region.

At present about one-third of the farms in New York are situated on hard-surfaced roads. A small percentage of the farms now on dirt roads will be located on hard-surfaced roads when the State highway system is completed. Most of the farms on dirt roads, however, will only obtain the advantages of a hard-surfaced road if, and when, these roads are improved by the county or the township.

In the provision of funds for road improvement it must be remembered that roads are no longer local. State highways are used chiefly for interstate and interurban travel. Even on the township or dirt roads one-fourth of the travel now is from outside the county. When a road is improved the travel increases due to the large number of persons from outside places who use the road for business or pleasure.

On County and Town roads and on Township roads the local unit is paying a larger share of the cost than is warranted by the local use of these roads. As highway travel increases more funds will be required. This maladjustment will become greater and will place a still larger burden upon the local unit. State aid to counties and townships for road purposes should be increased. The amount of state aid should be more in proportion to the use of these roads by outside travel. The State can afford to do this. New York now pays \$4,000,000 to \$5,000,000 annually over and above all receipts for the operation of the State Barge Canal system. A similar sum would build 7 miles of stone road at \$10,000 per mile in each county of the state. Highway transportation is at least of equal importance to that provided by the canal.

Attention also should be given to the method of distributing state aid so as not to discriminate against the poorer townships and counties.

In planning for the improvement of County and Town roads and Township roads it is not necessary that all the roads should be of the same width or thickness of pavement. The investigations of the Bureau of Public Roads have made available a wealth of information regarding road construction and maintenance. Of specific value are their studies regarding the width necessary for different densities of traffic and the thickness of pavement required to carry various loads. Intelligent use of this information by persons responsible for local road construction and maintenance will enable them to make efficient use of the funds provided.

THE ECONOMICS OF CONSUMPTION AS A FIELD FOR RESEARCH IN AGRICULTURAL ECONOMICS

WARREN C. WAITE

BUREAU OF AGRICULTURAL ECONOMICS

The economics of consumption as a field for research in agricultural economics is concerned with two things, the people of agriculture, and the products of agriculture. One group of studies deals with the nature of the consumption of the agricultural class; the other group of studies deals with the use of agricultural products. The general objective of the first group is an improvement in the efficiency of consumption of those engaged in agriculture. The general objective of the second group is to aid agriculture in adjusting its production program, and to enable the farmer to sell his products more effectively.

The problem of increasing the efficiency of consumption of the agricultural group is a problem to be attacked jointly by the several groups working with problems relating to the agricultural people, each developing the phases lying within the subject matter of the respective fields. Close cooperation between the agricultural economists, the home-economics group, and the rural sociologists is needed. One of these groups working alone is sure to overlook important elements in the problem. Certain aspects of the problem are, for example, clearly economic in their nature, principally those aspects which relate to costs and to the relative importance of costs in what constitutes efficient consumption. These concepts have been handled loosely in a number of rural-living studies. Sometimes the term "cost-of-living" has been applied to the expense of a certain "necessary" budget, sometimes to the value of goods actually consumed in a given case, and, at times, in both senses in the same study. Again the "cost-of-living," in the sense of goods actually consumed, has been taken to mean both the efficiency of consumption and the plane of living. A low "cost-of-living" may reflect efficient household manage-

This paper was read at the nineteenth annual meeting of the American Farm Economic Association, at Chicago, Illinois, December, 1928.

ment, but it can hardly be used at the same time to indicate a low plane of living. In short, any considerable advance toward the general objective of this group of problems will be achieved through the close coordination of the work of the specialists in various phases of the field. Without such coordination there will be much duplication of effort, and many pieces of work will not be particularly useful.

The first step in the solution of this problem is to determine precisely what the consumption of the agricultural group is. Work in this portion of the field has been done largely by the sociologists and the home economics group, and it consists largely of surveys and budget studies. One might raise a question as to how far the survey method may safely be pushed in this field. Experience in other fields has amply illustrated the danger of sampling, and of forgetfulness and memory bias. Moreover, these two groups do not seem to have been able to agree upon a clear demarcation of effort and purpose in their studies. We must, however, look to these groups for the advancement of our information. There would be little point in the economist's setting up separate studies. Many improvements from the standpoint of the economist, could, however, be made in the present rural-living studies. A more precise statistical characterization of the data than is afforded by simple averages, sufficient sub-classification of commodities and characteristics of consumers, to permit some study of consumption and demand by commodities or groups of commodities, analysing the data carefully in physical units separately from the value and price analysis avoiding arbitrary valuation and allocation and studies of the same families over a series of years, are all highly desirable.

Agricultural economists might do a great deal even now in studying the problem. Many new data are needed for a comprehensive study, but even more, imagination and resourcefulness in the use of existing data are needed. We are, for example, on rather uncertain ground when we talk either of the purchasing power of agricultural products, or of the purchasing power of the farmer. One reason is that we do not know the costs of things which the farmer buys. The Bureau of Agricultural Economics has made a dis-

tinnet contribution by preparing such an index for the United States as a whole, but indexes for different States and farming areas are needed, and State indexes of agricultural prices and of agricultural incomes. Another important step is the development of indexes for different sorts or qualities of agricultural living. These indexes should, of course, be comparable with each other, and indexes should be prepared for comparable urban groups. When data have been completed in these respects, other studies may be attempted. The incomes of the agricultural group may be compared with these indexes and with the incomes and indexes of comparable urban groups and the results of certain relationships determined. This will give at least a first approximation to the objective measurement of certain psychologically-defined concepts of the standard of living.

The second phase of the improvement of consumption consists in setting standards of efficient consumption. We can hardly expect to improve consumption until we know what good consumption is. The development of these standards is largely a matter for technicians, and we must look to the home-economics group for such advances as we are able to make. In fact, this is properly a major objective in the field of home economics. The problem is too complex to be worked out in detail, but we can achieve some success in setting out the general outlines. The major problem, and the most difficult, lies in setting the general objectives of consumption. Once these general objectives are agreed upon, then quantitative measures of the attainment of these general objectives can be found in many cases. But in this process costs and prices as major elements of equal importance with physical quantities and characteristics of goods must not be overlooked. Whenever there are various ways or degrees of the attainment of objectives, there must be a weighing of alternatives. There is great danger that technicians will overlook the economic aspects of the problem.

The final step in improving rural consumption consists of putting the standards which have been developed into effect. This consists in the provision of means for the

recognition of the qualities of goods, provision for the efficient obtaining of goods, and the education of the consumer as to both the standards of good consumption and the standards and qualities of goods. The provision of means for the recognition of the quality of goods is largely a technical matter, for the home-economics group to work out. The efficient obtaining of goods is, however, largely a question of the organization of the country supply service, or the decision as to whether to buy or make the goods. These are largely matters of economics, and there is need of some thorough going studies in the field. There are a great many studies of urban marketing, its costs and methods, but almost none of the costs and methods of marketing in rural areas. Likewise the problem of educating the consumers in the meaning of the standards involves much economics.

The second general type of study in the economics of consumption, that which deals with the consumption of agricultural products, will aid us in the development of proper long-time policies with regard to production and marketing as well as in some of the more immediate short-time problems. The need of such studies is becoming apparent in many lines of agriculture. Take the dairy industry as an example. Available data show that there has been a large increase in consumption of nearly all types of dairy products since the war. There is also some indication of a considerable expansion of dairy production during the next few years. We need to know whether this observed increase in demand is to continue, or whether the rate of increase of certain products is to decline, what new outlets in domestic and foreign markets may be exploited, and many other things. An intelligent shaping of policy by the industry obviously depends upon the nature of the demand for dairy products for a number of years. Unfortunately, as yet no comprehensive study of this situation has been made. The dairy industry is not unique in this respect.

Study of the consumption of agricultural products has generally not proceeded beyond the simple computation of per capita production in the United States. We cannot get very far toward a comprehensive grasp of the problem

without refining and classifying data a great deal more than this. The classifications which promise to prove most useful are those with respect to the consumption in particular places or areas, with respect to different uses of the product, with respect to qualities of the product, and with respect to certain characteristics of consumers.

The United States is so large, and people live in such a variety of circumstances that the consumption of agricultural products varies materially from section to section. A knowledge of these differences and the reasons for them is necessary if products are to be distributed in such a way as to yield producers a maximum return. Consumption may be low in particular places because of unfamiliarity with the product, prejudice against the product, or failure to be able to purchase it conveniently. Often these obstacles are easily removed if they are known. The discovery by city milk organizations that the apparently small-per-capita milk-consuming towns and villages will buy as much as their city neighbors when given a high quality product in a convenient form, and the belief that eating grape seeds gives rise to appendicitis are illustrations. More restricted studies of particular markets should enable us to pick out the markets which show unusually low consumption in view of the factors operating in those markets, and which are, in consequence, worth cultivating as outlets. Moreover, a large crop will need to be distributed in a different manner from a small crop to yield maximum returns. Local conditions in particular years may necessitate a different distribution than usual when crops are of usual size. The United States is so large and heterogeneous in its makeup that important factors are often averaged out, or isolated only in part, when we deal with the country as a whole. The effect of business conditions on consumption, for example, is often obscured, since business is seldom active or dull in all parts of the country at the same time. Correlations on a geographic basis, when consumption in different places form the dependent variable, enable us to get at certain factors in the problem that are not ordinarily revealed in the usual time-series analysis. This is an important method which should be exploited to the full extent.

Agricultural products are ordinarily used in many ways.

A cereal, for example, may be fed to livestock, used for seed, and consumed by man. The quantity in each of these uses changes with time, with the price of the product, the location of the crop, and many other conditions. We need, in consequence, to study the factors determining the quantity going to each of these uses. We need some knowledge of the elasticity of demand in each use. When we have broken the problem up into its parts and have made a careful analysis of the factors which are important in each part of the general problem, we are in a much better position to reconstruct the general or composite situation, and should be able to forecast with greater confidence.

Variations in consumption which result from differences in the quality of the product also warrant attention. Uses to which the product may be put depend in part upon its quality. There are distinct market preferences for particular varieties and qualities. A knowledge of these is essential to an intelligent marketing and production program. With certain sizes of crops and prices, the poorer qualities become unsalable at prices that will cover marketing costs. If producers are to avoid costly mistakes in marketing they must have information which will enable them to form intelligent judgments as to the qualities and quantities which it is best for them to market.

Information on the relation of certain characteristics of the consumer to his consumption is also needed. The relation of income to consumption is, for example, of great importance. Careful studies of this factor would enable us to handle the effect of employment and of general business conditions on agriculture more surely. We would likewise secure information on which to construct our demand curves outside the range of usual observations with much greater confidence. This is important since it is in the unusual situations that forecasts seem to go most astray. The nationality of the consumer, whether he is urban or rural, his type of work, and many other factors may prove equally important with income in determining differences in consumption.

Certain problems in the consumption of agricultural products may be approached better by considering the

products as groups of related products rather than as single products. Such are the cases where products are influenced by similar underlying major factors and when there is considerable possibility of substitution. We may classify agricultural products as food, animal feeds, clothing materials, and certain miscellaneous products; each of these break up into smaller groups. In these groups we often find a long-time and gradual displacement of one product by another. The place of wheat in the American diet, as has been pointed out, depends upon the products which it displaces and those which in turn displace it. There is evidence that wheat flour is displacing corn meal in the South and is in turn being displaced in the North by other foods. A knowledge of these relationships is essential in developing proper long-time policies. We also need to know the precise prices and the particular conditions which lead to the substitution of one agricultural product for another in short periods. The relation of the price of beef steers to the price of hogs has been shown to be quite different at high and low prices. The consumption of oleomargine and other butter substitutes is directly related to the price of butter. We are likely to make serious errors in our analysis of price situations without a knowledge of the prices of substitute products and of their relation to the prices and the consumption of the commodity in question.

There is also need of some broad studies of consumption of agricultural products as a whole. Such general studies are basic to the development of a proper agricultural policy. If consumption of particular products is to decrease, or if it can be permanently supplied by a portion of the better lands now in use, one course of action is called for. If, on the other hand, there is to be a large increase in demand for these products such that new land must be called into use, then another policy will be proper. Some knowledge of the elasticity of demand for agricultural products as a whole would be useful. We could then analyze the effects of large and of small total productions of agricultural products on the incomes of agriculture and industry. Curves of domestic demand and foreign demand are also needed for many purposes. The much-discussed

problem of the agricultural surplus turns principally on the demand curves for the various products.

In addition to the studies suggested, which deal directly with products, there are others which do so somewhat indirectly, in that they deal with what we may term the institutional aspects of the problem. These are concerned with the effect of our institutions upon consumption. Most of these studies lie in the field of marketing, but deal with phases that have been somewhat neglected. The costs and efficiency of operation of marketing organizations, materially affect price, and, consequently, consumption, but policy and sales methods also affect sales. Thus, the growth of the chain store is undoubtedly changing the character of demand for certain products and certain qualities of products. Those which do not fit in well with the methods and policy of the chain store must suffer as it grows in importance. Similarly, differences in the method of marketing may be responsible for some of the differences observed between places. Hucksters, for example, may be an important factor in one market though not in another. We have no clear idea of the effect of advertising agricultural products. Experience indicates that there is a great difference in possibilities in the case of different products. Similarly, the extent and effect of installment selling on the rural group is not known.

There are a number of important studies to be undertaken in the field of retail prices. We need to know a great deal more about the price structure of the retail market, the divergence in prices in the same general market between the different retail outlets, and the differences between the general levels in different areas. We do not know the distinctness of the market areas of the retail outlets for particular products or the price differences necessary to cause purchasers to shift from one store to another. The problem of setting up a retail price quotation for a particular market has not been sufficiently studied.

There are also to be made studies dealing with the price response of the retail market. We need to know how well the price system operates in passing on changes in central market prices to consumers, and whether one group of con-

sumers receives the result of this price change before another. This type of study would be of great theoretical importance in telling us how well the actual price system corresponds with that outlined in economic theory. The mark-up policy of retailers may materially affect comparative sales at high and low prices. A uniform percentage mark-up is likely to permit greater sales in a period of large production than when the mark-up is customarily a uniform amount. We also should know something regarding the response of consumers to changes in price. Here the problem is analogous to that of the elasticity of supply. In some cases the response may be immediate, in others the increase or decrease in consumption following a change in price may be gradual.

It is also to be hoped that we may get at some problems that are of fundamental importance to economic theory. We may be able to get some rough implications of the extent to which men's actions are motivated by economic motives and the extent to which they are deterred or held back by other factors. We could then evaluate the significance of many theoretical concepts and conclusions and approach certain problems with greater sureness.

It should be apparent that the economics of consumption is an important field for research in agricultural economics. It deals with many problems vital to agriculture and to the people engaged in agriculture. The field is, as yet, slightly developed but we may look forward to a great expansion and systematic development in the immediate future.

DISCUSSION BY HILDEGARDE KNEELAND

BUREAU OF HOME ECONOMICS

As a home economist who stresses the second word in the title, my first reaction to Mr. Waite's paper could easily be predicted. In considering the rôle of home economists in studies of consumption, Mr. Waite apparently sees us not as economists, not even as sociologists, but as technicians—by which I understand him to mean as nutritionists and cookery experts, textile chemists and needlewomen, sanitary experts and household engineers.

And it is natural that he should so think of us. For it is only in the last five years that we have begun to add the economist and sociologist of the home to our ranks. Their number is still small, of course, but it is rapidly

increasing.¹ And it is mainly these newcomers in the home economics field who are carrying on the studies of consumption and family living that are being started in many States. In some studies, of course, the "technicians" are cooperating—the nutritionists, health experts, and others—but those chiefly concerned are domestic economists and sociologists, if we may use that humble adjective to get around the terminological difficulty.

Many of the consumption problems which Mr. Waite mentions would seem to fall not only within the field of agricultural economists, but also in this new field of domestic economics. In fact, to those of us working in this field, the proper title of Mr. Waite's paper would seem to be "The Economics of Consumption as a Field for Research in Economics."

In the studies of consumption of the farm population, for example, the domestic economists also are interested in "those aspects which relate to costs," as well as those which relate to "physical quantities and characteristics of goods". And in that group of studies "which deal with the consumption of agricultural products" we also are interested in "differences in consumption in different sections of the country and the reasons for those differences," in "the relation of certain characteristics of the consumer and his consumption," in "the extent and effect of installment selling," in "the response of consumers to changes in price."

The application which we shall make of this information will, of course, differ from that of the agricultural economist, and many of the studies can best be made by one group independently of the other. But, as Mr. Waite points out, there are some studies which call for cooperation between those whose interest centers in agriculture and those whose interest centers in the home. In planning that cooperation, would it not clarify our rôle if you ceased to think of us as "home economists?" That term is unduly general for use in research projects—as general as the term "agriculturist." It is now some years since you agriculturists established yourself as groups of specialists. Somewhat tardily we home economists are following suit, and are attacking our new research program as specialists in the various problems of the home.

To offset somewhat this claim to some of the studies which Mr. Waite has assigned to the agricultural economist, I should like to suggest an addition to his list. Many of the studies of the consumption of farm families which rural sociologists and domestic economists are now making include no information on the size and sources of income, on the amount and character of savings, or on the economic history of the family. Such information is, of course, essential to an understanding of the expenditure pattern of the family. In future studies of this kind it is greatly to be hoped that the cooperation of the agricultural economists will be secured, in order that this aspect of the consumption picture may be filled in.

As further evidence that our spirit is not too greedy, we must, I think, partly disclaim one of the problems which Mr. Waite does bestow upon us—that of "setting standards of what constitutes efficient or good consumption." Mr. Waite describes this problem as "quite properly a major objective in the

¹ In Mr. Waite's audience there were more than half a dozen women working under home economics auspices with doctor's degrees or near-degrees in economics.

field of home economics." I wish we could fully make it so, but are there not decided limitations to our efforts in this direction?

"The major problem in setting standards," Mr. Waite says, "lies in setting the general objectives of consumption." But what does this mean but deciding upon the relative importance of the values of life? According to the most recent dictum on the subject which I have happened to read, "the prime essentials of the good life are health, freedom and leisure." By what scientific procedure can home economists prove this utterance right or wrong?

"Once these general objectives are agreed upon," Mr. Waite continues, "the quantitative measures of the attainment of these general objectives are readily found." But are they? The objective of health is probably most readily tested, and the nutritionist is, of course, already well armed with quantitative standards of healthful consumption. But for the other items in the family budget I see many obstacles to setting and to applying scientific standards. How are we to determine whether the farm family would have a greater or smaller sum-total of health if it spent more for clothing and less for the automobile, more for hats for the mother and less for jewelry for the daughter, or more for woolen hosiery and less for silk? The health of each individual is a product of so many variables and a fact of so many aspects as to defy the most resourceful statistician. Is there not danger here of letting the social reformer lurking in all of us get the best of our scientific spirit?

Since for the chief agricultural products, foodstuffs, we do have scientific standards of good consumption, is there not a connection between the first group of studies which Mr. Waite outlines, concerned with the efficiency of consumption, and the second group, concerned with the demand for agricultural products? The objective of the latter studies, Mr. Waite states, as the adjustment of the production program "to enable a farmer to sell his products more effectively." He would agree, I am sure, that such an adjustment should not do violence to the findings of his first group of studies. The results of these have already made it clear that for the rural population as well as for the urban, the consumption of some foodstuffs is too low and of others too high. In planning the production program for these products, the nutritive requirements of the population would seem to deserve consideration.

DISCUSSION BY HAZEL KYRK

UNIVERSITY OF CHICAGO

I shall consider Dr. Waite's paper as a discussion of economics of consumption as a field of research in general rather than as a field of research in agricultural economics. We are extremely glad for the happy accident that led the agricultural economists to develop this field. We owe to it a growing accumulation of interesting data, scholarly thought on the methods and objectives of such research and Dr. Waite's recent book. But we all assume, no doubt, that as a field of research, economics of consumption is by no means limited to agricultural economics.

I should like, in the first place, emphatically to endorse certain points made by Dr. Waite, his statement, for example, that even more than we need new data do we need imagination and resourcefulness in the use of existing data.

I have been saying the same thing to every one who would listen for the last two or three years. It has seemed as if the task of collecting the data, a task that is indeed time- and energy-consuming, exhausted the investigators, and after they had the data on hand they as quickly as possible lumped them together in the time-worn categories, found the percentage each was of the total, and announced, either that Engel's "laws" were confirmed or that equally well-known divergences were found.

It seems to me that I know several reasons why the treatment of expenditure data has, generally speaking, followed one single pattern, and, correspondingly, that I know two or three things that we might do to make our analysis of these data more fruitful and illuminating. In the first place, we must differentiate between a study designed to show what it costs a family to live—what its food costs, its clothing costs, and so on are—and a study designed to discover the patterns into which expenditure falls under given conditions through the analysis of quantitative data. Those of us who are interested in research in consumption should seek avowedly the laws or uniformities of consumer's behavior through the analysis of data on expenditures and not make "cost of living" studies. If the former is our definite purpose, we will be obliged to acquaint ourselves with the techniques necessary for studying quantitative data. It has probably not been lack of imagination alone, but lack of knowledge of statistical method, that has limited the study of the data collected. Furthermore, it seems to me that this statement of our objective will lead inevitably to that subclassification of commodities, that necessary detail, that will permit, as Dr. Waite says, the real study of demand. We do not buy "food" or "clothing." We buy specified kinds of food and clothing. If we are to study consumers' behavior, we must know its specific variations with changing conditions. Might it not be desirable, as the above suggests, to think of our studies of expenditures as studies in demand—in the variations, the elasticity, if you please, of demand under changing conditions? The quantity of a commodity purchased varies with the price asked, the income, and the composition of the consuming units in the community. It seems to me that by following out this line of thought we could broaden the treatment of demand in general economic literature and also set our imaginations at work in new directions in dealing with our expenditure data.

One other thing I believe would help to open our eyes to new possibilities in studying our data; that is, the enlargement of our knowledge of what has been done in other countries. The work of Engel, although outstanding, probably became so widely known in this country rather by chance, through his acquaintance with Carroll D. Wright and the references to Engel's work made by the latter in his notable study of the cost of living in Massachusetts in 1875.

My colleague, Miss Day Monroe, has been making a survey of the French and German studies of family expenditures and she has found not only many works that seem to be quite unknown to American students but many interesting suggestions on purpose and method. She has found, incidentally, that American writers seem to have taken over even Engel largely at second hand. Our knowledge seems to be limited to what Carroll Wright said in the Massachusetts study. In Engel's own work, for example, she can find reference to

no four "laws of consumption"—only two. She does find in Engel, however, a very thorough analysis of the possibilities and problems of research in this field. We would find very profitable a greater familiarity with Engel in his own words.

So much by the way of emphasizing the points already made by Dr. Waite. As was the case with his book, I find much that he says with which I am in hearty agreement. I question, however, whether I feel as optimistic as he does of the immediacy with which studies of the consumer's economic behavior can be followed by admonitions in regard to that behavior. We need, I think, to consider and discuss very thoroughly and honestly how, when, and why research in the economics of consumption will result in rules for the guidance of the individual consumer.

Understanding of our behavior, as full and complete as possible, is certainly, however, the first step in control and modification of that behavior. And we can all agree upon the desirability of moving forward toward that immediate goal as quickly and surely as may be.

EXPERIMENTAL METHOD IN ECONOMIC RESEARCH¹

M. L. WILSON

MONTANA AGRICULTURAL EXPERIMENT STATION

The Fairway Farms Project of Montana may be considered as a partial example of the experimental method in economic research. Time does not permit going into any details concerning this project. However, an outline statement may be found in the "Handbook of Research in Agricultural Economics" and also in April, 1926, issue of the "Journal of Land & Public Utility Economics." Suffice it to say that the experiment in its broader aspect embraces two distinct objectives; first, a test of a certain theory of landlord-tenant relationships whereby the tenant evolves into what we have been terming a "tenant-purchaser" and later a complete owner; and second, a testing out under field conditions of specific farm adjustments which grow out of the present economic situation in agriculture.

Certain new types of farm organizations have been set up on the basic assumption that these organizations will return satisfactory incomes under conditions where the prevailing modal farm organizations are not in healthy condition. There are nine farms which are operated under central corporation management. The farms have been in operation for four years and we believe that the corporation statement as of January 1, 1929, will show a net value over and above the original loan from Mr. John D. Rockefeller, Jr., and interest and expenses, of approximately \$30,000.

Thus far, the leaders in this subject have met with many unsuspected surprises, both in the way of successes and failures. Because of the continual managerial and financial responsibilities and the necessity of dealing with field conditions just as they are, the leaders of the project feel that they have received a kind of continuing education which could only grow out of such an experimental project. While there is much that we would like to say, we shall only speak of a

¹ Six papers on this subject were prepared for a symposium to follow the luncheon of the American Farm Economic Association at Chicago, Illinois, December, 1928. The three first presented here were read at that time.

few of the "high spots" growing out of this experience and make some observations which we hope will be helpful to those who are interested in this method of attack.

The participants in this project have discovered much in the way of timely and vital information thus far in dealing with experimental farm organizations on those Fairway Farms which had organizations based on very bold assumptions, and in which were brought together both "hunches" and "day-dreams" for which there was little available in the way of contributing evidence or experience. Some who examined these proposed organizations criticised them on the basis that they looked all right on paper, but would not work, mainly because they demanded unusual ability on the part of the operator. In this kind of experimental work we do not believe that the requirement of exceptional managerial ability on the part of the operator is a valid criticism. Progress always has been and always will be based upon the ingenuity and foresight of the exceptional man. In our economic progress, some way and some how, the exceptional men are always turning up.

The outgrowth of one of the "hunches" mentioned might be stated as follows: Six or seven years ago a great deal of corn was raised on Montana dry farms as a substitute for summer fallow. With the advent of the modern type of tractor, which began to change farm organization in 1924 or 1925, this corn crop began to disappear and be replaced with straight summer fallow. As a consequence, the livestock have been disappearing from the tractor wheat farms at about the same rate that the tractors have come on. For certain reasons which time does not permit of discussion, this presents a serious problem. The question therefore became "can some system be devised for raising corn as a substitute for summer fallow in such a way that it will not interfere with the wheat raising operations nor will it require more hours of man labor than ordinary summer fallow?" Certain "hunches" were submitted to our agricultural engineers in 1927 for working out a six-row listed corn cultivator. It took three trials to perfect a certain hitch, which when used allowed one operator with a 10-horse team to cultivate six rows of corn in one operation. The net result of this was

that this Fairway farmer raised 450 acres of corn from the beginning of work in the spring until harvest time with $17\frac{1}{8}$ man hours of labor per acre. While this system looks good, the objection raised is that the corn extracts sufficient moisture that the wheat when following corn does not yield as much as would be the case if it were on straight summer fallow.

"Hunches" grew out of this problem, partially based on some experience in Western Kansas, of planting two rows of corn, then leaving a blank space 12 feet wide such as could be cultivated with a certain type of duckfoot cultivator. Thus we would have a combination on any particular field of both corn and summer fallow. This scheme was tried out on one of the Fairway Farms last year in an extensive manner and moisture determinations this fall indicate that this land has practically as much moisture stored up in it as would have been the case if it had been plain black fallow, and on the other hand it has required no more hours of man labor than had straight fallow been practised. The scheme looks good. Now if it turns out to be as good as we are inclined to think it is at the present time, four of our present Fairway Farm organizations will have to be reorganized.

One of the outstanding things from the standpoint of testing farm organizations and readjustments on the Fairway Farms thus far is the development of the idea, that the leaders have no ambitions to work out a best farm organization. The world is in a flux and it is doubtful if the economic tendencies on the one hand, and the rapid advances in mechanical farm equipment on the other hand, have ever produced a need for rapidity and change in farm organizations such as exists at the present time. With farm organizations in a flux, the Montana experiment station workers hope to keep at the head of the procession at least to a certain extent, so that a reasonable number of the keener farmers in the particular type of farming in which they are working, will be watching their attempts at reorganization and adjustment, rather than seeing the experimental work tagging and following the methods first initiated by the farmers. Under the controlled conditions on the Fairway Farms the management is given the privilege of each year working out

readjustments, and as a consequence they have in operation several farm organizations which cannot be found anywhere in the state of Montana.

As an outgrowth of the Fairway experiment, I might cite what is taking place on the Conrad-Valier irrigation district. This comprises a large body of irrigated land which has not been doing well for a number of years past. As a result of a study made of the conditions on this project, eight farm set-ups have been worked out. These farm set-ups exemplify entirely new farm organizations none of which are to be found on the project today. In general the land owners and those financially interested in the community are assisting in putting into operation each of these set-ups on a 5-year program whereby at the end of three years the farm should be pretty much of a going concern, exemplifying each of the farm set-ups. We therefore feel that at the end of five years we will know a good deal as to the probable successes of these farm organizations. If we were to trust to the ordinary extension methods on the one hand and cut and try experimentation of farmers on the other, we doubt if these definite organizations would come into existence for many, many years to come.

As to the possibilities of the experimental method of research in connection with farm organization and readjustment, we believe that if the college and research men in agricultural economics, and more particularly in the special field of farm organization and management, are to exert a reasonable degree of leadership with both the more intelligent farmers on the one hand, and those who are financing agriculture on the other, and if we have reached a period in our agricultural development in which we may expect sudden and far-reaching changes in the method of financing sales, as well as in production technique, then we do not see how this leadership can be exerted without this kind of a laboratory.

Again the state through the Extension Service has set up a powerful sales agency that is demanding "up to the minute," concrete, applicable material. This is especially true in those states which are developing extension economic programs and outlook work. This experimental method is a

proving ground for testing out the application of new ideas in farm reorganization and adjustment before they are passed on to Extension workers.

Is it not true that this kind of experimental research work is very common in industry today? As a matter of fact, is it not a part of the regular order of industrial business research? Many types of industrial research have been taken over by the industries themselves, whereas agriculture depends upon the state for its research institutions. Now if the above assumptions are correct, and if agriculture has reached a stage in its development in which we may expect rapid economic changes, comparable with the changes in industry, then how are the state research agencies going to render this type of service without the use of this method? What is said here in commendation of the experimental method is not to be interpreted in any way as derogatory of the other methods of research. It is not argued that it should stand alone, nor that it should not coordinate with other methods. Rather, that many forces especially the Extension agencies combine to bring about a new day with new problems which demand new research methods.

There are, however, two outstanding difficulties that will be encountered in adopting this method of research. The first is the securing of capital with which to carry on such projects. It is doubtful if the cost in the end of this type of research will be any greater in proportion to results than the regular orthodox forms. It is necessary, however, that considerable amounts of capital be available and the problem of securing these outlays of capital in sufficient liquid form and free from the red tape with which federal and state appropriations are necessarily bound, is by no means a simple problem. Wealthy individuals during the past fifty years have made great contributions to many forms of research but have largely passed agriculture by, feeling, no doubt, that the state through its state institutions was probably meeting the demands of agriculture in the regular fields of biological and chemical research. May it not be possible that the experimental type of research may make an appeal to some wealthy men of the country who wish to do something in a constructive way for agriculture, which will sup-

plement and not duplicate, the funds and institutions supplied by the state. The second difficulty that arises is in connection with the personnel for this type of work. If we are to reason from analogy as to what takes place in industry, we may expect that just as soon as a young man becomes outstanding in some particular problem some hungry wolf will be standing at the door ready to drag him off into commercial work at a salary much higher than we can anticipate will be available for regular research workers.

EXPERIMENTAL METHOD IN ECONOMIC RESEARCH

W. E. GRIMES

KANSAS STATE AGRICULTURAL COLLEGE

The experimental method, freed from any service or extension activities, does not readily lend itself to economic research. Combined with extension and service activities, the experimental method gives promise of a much better knowledge of the response of people to economic facts and conditions. The Kansas Agricultural Experiment Station has made limited use of the experimental method in conjunction with extension activities.

In each of the last few years four to five hundred farmers have been induced to keep simple farm records as a part of the extension work in farm management. These records are kept by the farmers with limited supervision by representatives of the college. At the end of the first year's business the account books were summarized and analyzed. The extension service, aided by the research workers, wrote a letter to each cooperator commenting upon the good and the weak points in the cooperator's farm business and suggesting ways in which the weaknesses might be overcome. Each cooperator also had an opportunity to compare his business with that of other cooperators without knowing the identity of the other men.

The cooperators continued keeping the records during the second and succeeding years. As the records were completed for the second year and succeeding years they were again summarized and analyzed and any changes that had been made were checked against the suggestions in the letters. Letters were also written to the cooperators following the analysis of each year's business. Comparison of the suggestions contained in these letters with the changes actually made by the farmers afforded an opportunity to determine the response made by farmers to various suggestions. As this work proceeds, it is hoped that much more accurate knowledge may be available concerning the reaction of farm-

ers to economic suggestions based upon pertinent factual materials.

This work is being utilized by the extension service, to a limited extent, in planning extension programs in the counties in which the work is being conducted. Those lines of extension activity are stressed which give promise of receiving the most hearty response from farmers.

Insofar as this is a use of the experimental method, it is a case of exposing farmers to economic facts and suggestions and then studying the reactions secured. Some of the exposures have been devoid of any measurable results. Others have at least equalled the hopes of those offering the suggestions.

Similar studies are needed of farmers' response to outlook reports, intentions-to-plant and intentions-to-breed surveys and forecasts of market and price trends. Such reports are issued at present with comparatively little knowledge of their probable effect. It is hoped that the response will be sufficient to secure the desired result and yet not so great as to result in a change to the other extreme from that which seems imminent. More definite information is needed concerning the emphasis to be placed on these various reports, the method of statement of them, the method of distribution and the number of agencies issuing such reports.

As an illustration, the potato situation of 1928 was forecast in the outlook report of the Bureau of Agricultural Economics issued in January, 1928. In spite of the warnings given, surplus conditions developed in the potato industry. No one knows the degree of emphasis the outlook should have carried in order to induce planting of reduced acreage. Could it have been averted in any way? How far can an agency such as the Bureau of Agricultural Economics or a State Agricultural college safely go in attempting to prevent relative under- or over-production of a particular product?

By varying the statement of reports, by using various agencies for their dissemination, by changing their frequency, and by issuing them by varying numbers of agencies, experiments could be conducted and the results measured by checking up on farmer response after the effects of the report were apparent. This would involve studies of the

changes made by individual farmers in their production plans, the reasons for the marketing of products at the time they were marketed and other similar studies of farmer response. Obviously, many complicating problems would enter into the study, and safe prediction of the outcome could scarcely be made in advance of the study.

These are matters deserving of careful study. Perhaps they cannot be solved; perhaps they can. At any rate, the equipment for the use of the experimental method in studying the problem is all available and in operation. It is a question of controlling the materials going to farmers and then studying the results secured under varying degrees of control.

Another phase of marketing research in which the experimental method might be found useful is in studies of the control and disposal of agricultural surpluses. Many proposals for the control and disposal of agricultural surpluses have been made. Probably all of these proposals have been based upon deductive reasoning. A farm board or some other agency with sufficient authority and funds to try out some of these proposals in an experimental way would render a distinct service to agriculture and aid materially in clarifying the entire problem of extending effective and constructive relief to agriculture.

In the opinion of the writer, the experimental method appears to be most useful in research in the economic problems of agriculture as a means of studying human reactions and human relationships. Due to the fact that the subjects of the experiments are people, the problem of using this method is by no means an easy one. However, there are certain well-defined fields of research within which the use of this method should produce results of consequence directly to the welfare of agriculture and indirectly to the welfare of all.

EXPERIMENTAL METHOD IN ECONOMIC RESEARCH

CLIFFORD C. TAYLOR

VIRGINIA POLYTECHNIC INSTITUTE

I shall undertake to explain the method which we are using in Virginia to combine economic experimentation and demonstration in farm business problems.

Most of our experience in this matter in Virginia has been in connection with the reorganization of dark tobacco farms in Charlotte County. In the year 1922 a detailed cost route was established which was continued in that county for two years. At the end of the third year, twenty demonstration farmers were selected and a survey record was taken of each of these twenty farms for comparison with the financial returns revealed in the detailed cost studies of the two previous years. At the same time, a detailed set of recommendations was prepared for each of these twenty farmers based upon the preceding research. These recommendations took into account the natural limitations of the farms and the personal limitations of the farmers. They were prepared by the same man who had charge of the cost route, but with the advice of the county agent, the farm management demonstrator and the agronomy specialist. They were in detail but were not voluminous. For example, for one of the farmers whose volume of business was too small and whose quality of tobacco was low, the recommendations read as follows:

1. This farm needs more labor as the present amount of equipment and work stock is sufficient to handle at least twice the present acreage of crops.
2. A share-cropper or wage-hand should be secured and this additional labor used largely for producing tobacco.
3. The farm operator should continue planting approximately two acres of wage tobacco and grow more grain and hay crops.
4. A definite rotation should be worked out for both the corn and tobacco shifts.
5. The poultry enterprise could be developed to a much greater extent with profit and the operator should be advised as to the best methods of developing the poultry enterprise.
6. Tobacco land needs liming.

Twice each year these farmers are visited by the former route man and the farm management demonstrator to remind them of the proposed changes and to give further advice as to how these can best be brought about. Of course, the county agent usually sees them at more frequent intervals on other matters and he also makes it a point to remind them of the proposed changes at such times. At the end of the year, a survey record is taken to determine the financial progress which has been made as a result of the changes.

The particular farmer who was given the foregoing recommendations has carried out the first three recommendations only in part but he has carried out the fifth suggestion with reference to the development of the poultry enterprise with such remarkable success that he has entirely discontinued growing tobacco. As evidence of the value of these recommendations based upon the previous research, it is interesting to note that when the study was begun livestock income on this farm amounted to \$252. Three years later when the recommendations were given, livestock income amounted to only \$192. The poultry flock at that time consisted of 35 hens.

In 1926 the livestock income amounted to \$680 and in 1927 it amounted to \$1,439. On the other hand, tobacco income which had amounted to \$285 in 1922 and only \$40 in 1925 was completely dropped from his sources of income. Operator's earnings, which were \$431 in 1922 when tobacco was selling at a good price and which had dropped to \$332 in 1925, were increased to \$670 in 1926 and \$743 in 1927.

Eleven of the twenty farmers were dark-tobacco growers. On three of these farms the recommendations were never followed and the net earnings are now minus figures. These three men correspond to the "check plot" in a crop experiment. On each of the other eight dark-tobacco farms the recommendations were followed and operator's earnings in 1927, even with low tobacco prices, were much higher than in 1922. The increase amounted to 10 per cent on one farm and 80 per cent on another farm and averaged about 40 per cent for the farms studied.

In its earlier stages, this project was entirely research but at the present time it is almost entirely extension. How-

ever, it continues as a research project since it is a study of the extent to which farmers can be induced to use research results for the reorganization of their farm businesses and also a study of the financial benefits obtained.

We are so well pleased with the results of this project that we have decided to follow the same procedure in four counties near Richmond where a detailed cost study on dairy farms has been under way for two years. In its later phases, this project calls for close cooperation between the route man, the farm management demonstrator and the county agent. However, in my opinion, this constitutes one of its chief advantages because it insures that the research man will make the study as practical as possible while, at the same time, insuring that the extension workers will have complete knowledge of the results of the study and how they were obtained.

EXPERIMENTAL METHOD IN ECONOMIC RESEARCH

GARNET W. FORSTER
NORTH CAROLINA STATE COLLEGE

North Carolina State College is conducting two projects in experimental farm organization and management. One of these projects consists of a farm unit located on the experimental station farm. This is a joint project conducted by the Dairy Husbandry, Agronomy and Agricultural Economics departments. The second project is strictly a field project and in many respects is similar to the standard farm organization and management projects conducted by the route method.

The object of the project located on the experiment station farm is to secure definite information under immediate supervision of the station workers regarding dairy cattle as a supplementary enterprise to cotton. This project will begin January 1, 1929, and is divided into three divisions.

- I. Cotton is to be grown in a three-year rotation with feed crops for dairy animals, manure being returned to the soil.
- II. One field to be given over to the continuous production of cotton.
- III. Cotton will be grown in a three-year rotation without dairy cattle as a supplementary and complementary enterprise to cotton and consequently, of course, without the addition of manure to the cotton.

Thirty-two acres is assigned to this work, twenty-four of which will be given over to a three-year rotation consisting of, (1) Corn and soybeans, (2) Barley and vetch followed by soybean hay, (3) Cotton followed by rye and vetch.

To this division will be assigned 4 to 6 dairy cows. The exact number will depend upon the crops now growing on the land. The crops grown in rotation with cotton will be harvested and fed or grazed by the animals assigned to the project. The necessary concentrates will be purchased for the dairy animals. The manure will be saved and applied

to the rotation. Detailed labor and financial records will be kept.

Division II will consist of cotton grown each year without rotation (2 acres). Records will be kept of the man and horse hours by operation and the value of the crop produced.

Division III will consist of check rotation of the same crops and in the same order as Division I. These crops, however, will be grown on a smaller area (6 acres) without livestock. The crops of this area are to be harvested and the yields and market value recorded in the same way as the other two divisions.

Recommendations with respect to fertilizer, feeds, method of operation have been worked out in advance and will be followed as far as possible during the year.

It is believed that the results of this project will give (1) definite information on the costs and returns from cotton and crops grown in rotation with cotton and the influence of these crops on cotton yields; (2) the experiment should show advantages and disadvantages of livestock as a supplementary and complementary enterprise to cotton and the influence of livestock on cotton yields; and (3) it should furnish definite information with respect to the net farm income from the definite combination of farm enterprises.

The field project in experimental farm management was started in 1927. The first year's work consisted of keeping labor and financial records with about thirty farmers in a cotton and peanut producing area of the State. From the data collected combinations of enterprises were worked out for definite sized farms and the information was distributed among the cooperators. These combinations of enterprises were projected on the basis of the outlook reports for the year 1928. During the second year, which has just been completed, there were about fifty farmers keeping records. From the second year's records it will be possible to determine to what extent farmers changed their plans in accordance with the suggestions of the department, and also the effect on farm income of the changes made. This project will be continued for a period of five years. Other sections of the State will be studied in a similar manner.

EXPERIMENTAL METHOD IN ECONOMIC RESEARCH

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If we accept in general the rather liberal definition of the Experimental Method given in the Handbook on Research Methods and Procedure it would seem that the experimental approach has a real place in the study of social science problems. Its place must, however, for as far ahead as we can now see, be as a supplementary method, not as a primary method.

Even some further modification of the definition of "experimental method" might apparently be made without sacrificing the use of the term altogether in social science studies. It does not seem absolutely essential that, for a "*Trial* to qualify as an experiment . . . there must be more than the usual chance that it will turn out badly." May we not have two or more alternative methods, for example in selling, which might be tested in an experimental way without any of them being distinctly bad methods? Undoubtedly the large financial and human problems involved in social science problems are likely to preclude the use of the experimental method if the probabilities of a distinctly bad outcome are very large.

Considering specifically the field of agricultural economics research

1. The experimental method may prove one of the most valuable means of studying the effect of organization policies upon the responses of members of cooperative associations.

2. Some of the personal relationship phases of farm rental problems can apparently be studied in a semi-experimental way with greater effectiveness than by any other method. The failure to use this approach may perhaps account for the dearth of enlightening studies of the farm tenancy problem.

3. Studies of farmers' production reactions to price changes and of consumers' demand reactions to price situations can be approached in a semi-experimental way in some

cases. For example, given qualities of a product may be offered at varying prices and the effects upon consumer purchases studied; different prices for varying qualities of cream, of fruit, or of potatoes may be offered in order that the producer responses may be studied.

4. On a larger scale, it may be possible in making the agricultural outlook material more effective to try out the effects of different methods of stating conclusions, those from different methods of passing on this information to producers, etc.

5. The field for joint work with technical agricultural departments in an experimental way is manifest, and much in need of cultivation. Ezekiel, McNall, and Morrison in their studies of factors affecting dairy production have touched upon some very suggestive possibilities for further work both statistically and experimentally.

6. The field of farm reorganization which is most frequently referred to as an example of the experimental method appeals to the writer as being much more in the nature of demonstrational work than of experiment. Study of these problems by statistical methods seems much more promising and much less expensive than through experiments.

7. In general, if the foregoing points are well taken, it would seem that the most promising fields for experimental study may be found in the psychological phases of the subject, though a very large field is also available in collaborating with technical workers in other phases of agricultural investigation.

EXPERIMENTAL METHOD IN ECONOMIC RESEARCH

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Apparently there is a feeling more or less general among scientific workers that the social scientist must arrive at his results or conclusions by methods other than the experimental. This feeling has grown, no doubt as a natural consequence of the highly unstable and variable nature of the elements and forces with which the economist deals. Taking the usual and accepted meaning of experimentation as holding all the factors constant except the one in question, he sees the extreme difficulty if not impossibility of setting up an experiment which will entirely conform to this rigorous interpretation of the term.

With the rapid development and application of technical statistical methods to agricultural economic research in recent years has grown the feeling that the use of these methods alone (in some cases) or in conjunction with the experimental will enable the economist to accomplish essentially the same results as are now obtained by strict experimentation in other fields. It is recognized that the human and other elements in an economic experiment are not subject to the same manipulation or control as are the factors in an ordinary experiment in the natural sciences. The experimenter consequently must control the factors which are controllable experimentally and endeavor to isolate and measure the factors not under control by correlation analysis. This involves an approach and technique different from that usually followed and many problems will arise incident thereto which will have to be solved apart from those pertaining directly to the question under study in the experiment.

Through experimentation in conjunction with the use of statistical methods it should be possible to:

- (1) Measure the effect of supervised economic adjustments upon returns from farming.

- (2) Test out the effect of various degrees of specialization upon returns in a particular area.
- (3) Determine the economic unit best adapted to conditions in particular areas with given technique, managerial skill, etc.
- (4) Determine the effect of new machines, new methods and practices upon returns.
- (5) Test out the practicability of new forms of operating units.

Measuring the effect of supervised economic adjustments.

There is a question in the minds of a good many people as to how far we can go in advising farmers to use outlook information and what effect such information properly interpreted and applied will have upon the returns of the farmers using it. A set-up along the following lines should give a fair measure of the effect of such a supervised service.

Select a group of farms (possibly 50) in a given type-of-farming area, which are representative of the general run of farms in the area with respect to size, yields, conditions of production, production practices, etc. For each of these farms at the beginning of the year work out the combination of enterprises which appears most profitable for them for the coming year in the light of prospective prices of products and cost goods and based on production relationships, yields, and practices prevailing in the area. Compare these returns for each farm with those which could be reasonably expected by continuing the present organization (using same production, standard prices, etc., as in other case). At the end of the year compare the results actually obtained from the adjusted organization with the results which probably would have been obtained from the old organization (had it been followed) or with the results obtained had the farmer shifted his plans in the same direction and about to the same extent as other farmers in the area (using yields and prices actually prevailing during the year). The difference in returns would give a fair measure of the effect of the change in organization upon results. The input-output information needed for working out such reorganizations could be supplied by experimental projects jointly conducted by the economist and the biological scientists.

Testing out the effect of various degrees of specialization upon returns. The amount of specialization desirable at a particular time in a given area is a question about which there has been considerable controversy. An experiment carefully planned along the following lines should throw some light upon this important problem.

Take a large group of farms such as indicated in the previous experiment, divide these farms into sub-groups as nearly alike as possible in everything except in the type of organization followed, which is the variable under study. The sub-groups should be large enough so that the differences in managerial capacities would smooth out in the average. On each of these sub-groups set up organizations with varying degrees of specialization in the major crop supplemented by other enterprises commonly grown in the area. At the end of the year after making adjustments in unusual occurrences such as yields, crop failures, sickness, etc., a comparison of the average returns for the different groups should show reasonably well the differences due to variations in the degree of specialization in each group.

With certain elaborations this experiment could be expanded so as to serve as a basis for determining the economic unit best adapted to the conditions in a particular area, taking the degree of technique and managerial skill existing in the area at the time.

Only brief mention can be made of the possibilities of testing out the practicability of new forms of operating units—unless we accept the philosophy that the ultimate aim in farm organization research is accomplished with the finding out of what the best farmers in an area are doing and getting other farmers to do the same thing; then there is room for testing out new ideas and new forms of operating units which are at present non-existent. New departures in organization, technique, machines, and methods can be tried and their effect upon returns tested out and determined for any given set of conditions prevailing. Such results would be of great value in determining the best systems of farming in an area and in indicating desirable adjustments in these systems from time to time.

SCOPE AND METHODS OF RESEARCH IN LAND UTILIZATION

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The field of land utilization has as its objective the determination of the causes and effects of different types of land utilization with the end in view of generalizing the findings in plans for public or private action with respect to the use of land. To be more specific, the development of technique in land utilization involves the determination of the economic significance of the natural and artificial environmental factors of an area. A wide-spread interest has recently been shown in the subject and this interest has manifested itself in definite steps taken to develop more knowledge concerning the effect of soil physics, soil chemistry, moisture supply, temperature, light, topography, location, markets, character of population, price conditions, comparative advantage, friction of economic adjustment, and financial conditions, upon the optimum use to which land may be dedicated. This new interest recognizes no administrative lines and is confined to no recognized field of science. At present it is "no man's land" and everybody's ambition.

It is not entirely a job for economists. The present discussion is a brief statement of the way in which a number of soil specialists, economic geographers, land economists, foresters, ecologists, and farm organization experts in different parts of the United States are approaching this important question.

Soils specialists are naturally interested in following up their work to the point of measuring the economic significance of the differences they have found in the physical character of the soil. There has therefore been a tendency for soils men to break away, from time to time, from the original objective of classifying soils on the basis of their inherent physical characteristics and to inquire further into their

Address given at the Meeting of the Western Farm Economics Association, Corvallis, Oregon, June, 1929.

Paper No. 3, The Giannini Foundation of Agricultural Economics, University of California.

adaptation and use. Outstanding examples of this may be found in the classification of soils according to their adaptation in several surveys made by the U. S. Bureau of Chemistry and Soils in the State of Washington in 1909¹, 1911², and 1913³, and Bonsteel⁴ formerly of the U. S. Bureau of Soils has also given much attention to the utilization of the soils of New Jersey and has published the results of his work there. Cosby⁵ in 1925 published his analysis of crop soil relations in the Gilroy region of California. This study was a distinct step in advance of those made previously by soils specialists in that correlations were made, by map and statistical method, between soil type and land use. The methods used resemble those of a certain group of economic geographers to be mentioned later.

Morgan of the Connecticut Agricultural Experiment Station has developed indexes of productivity on various soil types. The criterion for his differentiation was largely land use, supplemented by experience on experiment station plots. He selected sample areas throughout the State, mapping the land in these into general crops, intensive crops, open pasture, brush pastures, old field reverting to woodland, marsh land, mixed hard woods, coniferous forest, swamp hard woods, tidal marsh, urban and recreational use. On the strength of his judgment as to the importance of these uses and from yield data obtained on experiment station plots, he assigned quantitative indexes of productivity to his various soil groups which were combinations of soil types and soil series combined on the basis of similarity in productivity and adaptation. This is an important step which will have to be taken by one means or another by those working in the economic phases of this field.

Cooper of Cornell has grouped the soil types of New York on the basis of their calcium content. He goes farther and presents some interesting results with respect to crop

^{1, 2} Maungum, A. W. and party. Reconnaissance soil survey of the eastern part of the Puget Sound Basin, Washington. 1909. U. S. Dept. Agr. Bur. of Soils. Feb. 27, 1911. 1911. U. S. Dept. Agr. Bur. of Soils. May 15, 1913.

³ Van Dwyne, Cornelius, and Fred. W. Ashton. Soil survey of Stevens County, Washington. (Advance sheets—field operations of the Bur. of Soils, 1913.) Nov. 6, 1915.

⁴ Bonsteel, J. A. Soils of southern New Jersey and their uses. U. S. Dept. Agr. Bul. 677:78 p. Oct. 24, 1918.

⁵ Cosby, Stanley W. Utilization of the soils in the Gilroy Region. California Agr. Exp. Sta. Hilgardia 1 (18): 1-478. May, 1926.

adaptation of soils having different chemical properties and proceeds to demonstrate that there is a more or less definite relation between the dominance of certain ions in soil complexes and the types of plants that grow well thereon. This side trip into the realm of the physical sciences is to show what the land economist or the economic geographer is likely to encounter if he attempts to explain all of the variations in land adaptation and use. The experience of the soils specialist in the field of economics will be just as difficult.

Physiographic ecologists and specialists in phytogeography for years have been working on associations between the different land forms and different climatic conditions respectively and leading plant formations. Before getting into the economics of land utilization, therefore, it might be well to mention some workers who have done much of economic importance in pointing out these associations and adaptations which have great significance when the sites upon which these natural associations occur are transformed into areas of economic crop production. The works of Shantz⁶, Livingston⁷, Clements⁸, Lehenbauer⁹, and others should be of value to the land economist who wishes to do more than make a superficial observation of economic phenomena and who desires to get at the fundamental reasons for some of his observations and provide background for his recommendations.

Agronomists, horticulturists, foresters, and those working in animal husbandry have contributed much of value to the questions arising in the field of land utilization.

No group of professional men have made greater practical use of ecological principles than have the foresters. Site

⁶ Shantz, H. L. "Natural Vegetation as an Indicator of the Capability of Land for Crop Production in the Great Plains Area," Bur. Plant Industry, Bul. No. 201, Washington, 1911.

⁷ "Types of Vegetation in the Semi-arid Portion of the United States and their Economic Significance," Jr. Agr. Research. Vol. 28, No. 2, Washington, 1924.

⁸ Natural Vegetation, section of atlas of American Agriculture, U. S. Dept. of Agr., Washington, 1924.

⁹ Livingston, B. E. and Shreve, F. The distribution of vegetation in the United States, as related to climatic conditions. Carnegie Institution. Pub. No. 284, 1921.

⁸ Clements, Frederic E. Plant succession: An analysis of the development of vegetation. Carnegie Institution Pub. 242: xiii 512 p. 61 plates, 50 figures. 1916.

Plant indicators: The relation of plant communities to processes and practice. Carnegie Institution Pub. 290: vii + 388 p. 92 plates, 25 figs. 1920. (Co-author Jone E. Weaver.) Experimental vegetation: The relation of climax to climates. Carnegie Institution Pub. 336: vii + 172 p. 15 plates, 41 figs. 1924. Co-Author Glenn W. Goldsmith.) The phytometer method in ecology: The plant and community as instruments. Carnegie Institution Pub. 356: 112 p. 11 plates, 45 figures. 1924.

⁹ Lehenbauer, P. A. Growth related to temperature. Physiological Researches, 1913-15. 1 (1): 247-286. Station N. Baltimore, Maryland.

classification and adaptation, though old in its elementary aspects, is a concept just dawning on the horizon of scientific agriculture, but has been under consideration by scientific foresters for more than a hundred years. It is perfectly natural, therefore, that the idea of rural zoning should take root first in areas where forestry and agriculture are competing for the same land.

In northern Michigan and northern Wisconsin, where this idea has been established most firmly, results are beginning to take form. We find in the northern portions of the Lake States four distinct types of land utilization research in progress.¹⁰ The pioneer effort is the Michigan Land Economic Inventory. The Michigan inventory has been given wide publicity but its salient points will be described briefly for comparison with work being done elsewhere. The purpose of the Michigan Land Economic Inventory is to find ways and means of putting more land into productive use. Indirectly it is to solve the tax delinquency problem which is resulting in rapid acquisition of large areas of land by the State and is causing pyramiding of local-government expense making necessary State subsidies in many localities. The inventory is also for the purpose of supplying the facts on the basis of which the State Department of Conservation may determine its policies and direct its activities.

The work in Michigan is being carried on by the Land Economic Survey division of the State Department of Conservation in cooperation with a soils specialist representing the State College of Agriculture and the Federal Bureau of Chemistry and Soils. The full time staff includes, in addition to the soils specialist mentioned above, the director, a forester, soil surveyor, land economist, draughtsman, and stenographer. The part-time staff, working only during the open season, includes a hydraulic engineer, rodman, geologist, technical forester, two soil surveyors, eight soil mappers, ten forest mappers, one cook, one assistant cook and one auto mechanic.

The immediate objectives of these workers are the preparation of a soil and "lay of the land" map, also a cover map showing upland, lowland and marsh timber types, open wild

¹⁰ These four types are: (1) the land economic inventory without correlation; (2) the analysis of a special problem in its relation to land use; (3) the intensive land economic analysis using correlation methods, and (4) the "extension type" of land economic survey.

land, cleared farm land, city, village and industrial property, stump farm land, permanent pasture, commercial orchard and, apparently, idle or abandoned farm land. In addition to the soil and cover maps, various maps and compilations of economic significance are made. These include the nature of land ownership, that is, who are the owners, why are they owners, and what their intention is as to utilization. Assessed valuation, tax rate, and tax delinquency, kind and size of industries, and volume of production, freight shipments in and out, trade area served by, or serving, each village or shipping point are also included in the economic inventory.

The outstanding characteristic which makes the Michigan Land Economic Inventory different from other studies being made is that it does not claim to be an analysis, nor does the administration attempt any correlations except those which stand out on the maps and cannot escape notice by those inclined to make comparisons. The survey offers an excellent beginning point for economic study. Another important feature is the opportunity afforded for the creation in the minds of the different workers of an appreciation for the work of the other specialists schooled by directed contact with the land and fellow workers. Arguing over their problems at night in camps, they learn the real significance of soil types in relation to forest growth, farm abandonment, tax delinquency, and other economic factors. This is probably more important to the State of Michigan than mathematical correlations. The personnel of important State administrative offices is being recruited from this field crew.

Considering many of the same factors, Wisconsin has experimented with the three other types of research with much the same objectives in mind. These consist of a general study of tax delinquency problems in seventeen northern Wisconsin cut-over counties; a rather intensive study of the relation of taxation and land utilization in one (Lincoln), which was conducted by the Wisconsin College of Agriculture in cooperation with the U. S. Forest Service and U. S. Bureau of Agricultural Economics, and an extensive survey in another (Marinette). This survey, called the "extension type" by those conducting it, differs from the study in Lincoln county in organization and in intensity of field work

but is patterned after it. Wisconsin is also conducting a land economic inventory of Bayfield county, patterned after the Michigan land economic survey. All studies place a great deal of emphasis upon the collection of data concerning physical characteristics, land use, ownership, tax delinquency and tax sales, financial condition of county and town governments, data concerning wood using industries and land settlement program. Only the Bayfield County study goes into the detail of mapping physical features so completely as does the Michigan inventory. In the Bayfield County inventory some 16 or more men were employed. In the Land Use and Taxation Survey in the Lincoln County study only two men were at work collecting economic and physical data. The difference was not so much in the kind of data collected as in the detail with which different factors were obtained. The Land Use and Taxation survey, on the other hand, involved much more analysis than the inventory and definite recommendations were made as to needed legislation and action on the part of local and State bodies.

The Marinette County study is distinctive inasmuch as it involved the cooperation of representatives from the local county board, several departments of the State College of Agriculture and the State superintendent of schools for the purpose of studying the problem and making recommendations for public action. The data collected were of the same kind as in the other three types of study mentioned above but in much less detail. An existing soil map was used and only rough approximations were made of forest land utilization. The analysis in the Lincoln County study and the general study of tax delinquency problems in 17 counties involves a large amount of statistical tabulating, sorting and correlation. There is little difficult technical reading however in the published material thus far issued. In the Marinette study most of the correlations were shown in map form. Obvious relationships, which could be discovered by comparing the numerous maps, formed the basis for most of the conclusions. The conclusions were much the same in Lincoln and Marinette Counties. On the basis of the Lincoln county and general tax delinquency studies

a program of county zoning was advocated which would prevent land settlement in areas better suited to forestation and recreational development, and suggestions were made to abolish certain farming areas, school districts and roads and in other instances to combine school districts and town governments to reduce expense. Desirable state legislation was also suggested.

An opinion might be ventured that the more general survey should be effective in arriving at a policy of improvement while the thorough inventory as the Bayfield County project would seem more adequate for actually carrying out the plan proposed. This is consistent with the views of those closely in touch with the work. They advocate the carrying out of more intensive studies of certain features as their need arises.

An important observation should be made before leaving the cut over region of the Lake States. These studies, while having much in common with other land utilization studies, are designed to meet a condition of a high rate of tax delinquency. Tax delinquency, therefore, is used, along with other physical and economic evidence, as the most important criterion for drawing the "dead line" between forest land and land suitable for other purposes. It is recognized that this is not an entirely accurate measure, but it serves to mark off large areas which are clearly not agricultural.

As we go into the Appalachian region another criterion must be set up, for tax delinquency is not the problem confronting the eastern States. Farm abandonment, delapidated buildings, and low standards of living are the concern of the eastern investigators of land utilization. Many of the studies in the Appalachian region are being carried on in cooperation with the Land Economics Division of the U. S. Bureau of Agricultural Economics. In these, therefore, there are points of marked similarity, but there are certain outstanding differences due primarily to regional characteristics, differences in personnel, development of research methods, and to funds available. The distinct point of similarity in all of these cooperative studies is the use of an elaborate schedule for determining farm income, farm costs and labor efficiency, and the emphasis placed upon standard

of living as the criterion for establishing the "dead line" between agricultural and nonagricultural land. In these surveys, as in the Lake States, correlations between specific combinations of physical characteristics on the one hand and economic factors on the other constituted the main procedure and analysis. Basic physical data are essential, therefore, and where not available in the form of soil maps, topographic maps, and cover maps, these must be provided as a part of the research.

Some studies of land utilization are being made in the eastern states which are not cooperative with the Federal Government and which vary in some important respects from those just mentioned. The Cornell Experiment Station has been conducting a series of surveys to determine what should be done in the light of the persistent problem of farm abandonment, which has a depressing influence upon the citizens of the State and gives a wrong impression to the visiting outsiders as to the prosperity of the State, while vast areas now being used for an uneconomic purpose might just as well be producing more wealth for the people of the State and Nation. The Cornell studies have made distinct contributions to technique of investigation by the application of the principles of efficiency studies used in farm organization research to whole areas of comparatively homogeneous physical characteristics, for the purpose of determining the output per unit of input for any particular area selected for study. These studies have also introduced inquiries pertaining to the character of the rural population. The Division of Land Economics of the U. S. Bureau of Agricultural Economics also emphasizes this aspect. In addition to the usual physical and economic data collected, statistical information concerning the trend in the numbers of people living on farms, the number and ages of children, and birthplaces of the parents of present farm occupants have been compiled and analyzed. The location and occupations of owners of vacant farms and the number of years which have elapsed since they left their farms has also been a part of the New York studies. Causes for abandonment, the nature of the process of abandonment, ownership in relation to success in farming, possibility of success with other types of farmers or other types of farming, opportunities

for the present settler in case his land were taken for forestry, best use of the land and means of bringing about best use, effect of proposed changes upon taxation and other pertinent questions are the subjects of analysis in these studies.

The Lake States studies mentioned, the cooperative studies in which the Land Economics Division of the U. S. Department of Agriculture is exercising its influence, and the particular research in New York which has been briefly described are confined to areas where the major uses of the land are in question; that is, it is a question between the use of land for agriculture, forestry, recreation or some other purpose, or, possibly, no purpose. This is a convenient basis of designation of the field from an administrative point of view. The studies on the margin of economic agricultural production will give us much knowledge concerning the agricultural industry as a whole. They are justified from the standpoint of their relation to the surplus problem. Their greatest importance, however, lies in the local effect upon the social structure and in the value of intelligent regional planning for economic progress. In economic adjustment there is much friction which retards the operation of economic forces. It is hoped that these studies may expedite the process of adjustment and prevent the maladjustments so widespread on the margins of economic agricultural production, which follow in the wake of unstable price conditions.

The successful solution of this problem at the margin and the many problems of farm organization in areas which are strictly agricultural depends upon the development of similar measures of differences in the economic significance of different combinations of physical and economic characteristics, in areas that are not on the margin. The next logical step in the type-of-farming area studies being so enthusiastically promoted in various parts of the country is the correlation of results in farm organization studies with combinations of soil, temperature, topography location, markets, prices and a number of other factors, with a view, not only of planning the proper farm organization for individual farms in harmony with physical and economic characteristics, but also this technique must be developed for

rural planning involving numbers of farms and industries and also for providing the basic requirements for feasibility determinations and land use at the margin.

The nearest approach to such research is the series of studies being conducted at the Storrs Agricultural Experiment Station in Connecticut. The work at Storrs has gone through several stages of development. Only the more recent will be mentioned here. The purpose of one of the projects now being brought to completion at Storrs is a study of the significance of soil type in dairy farming.

The area of Connecticut is subdivided into organized towns of about 20,000 acres each. Towns were selected for the study on the basis of the generalized soil map. Selections were made from two predominant soil types. Eight towns in all were selected. From assessors' records all farms were chosen which had five or more neat cattle. Descriptions of these farms were placed in a hat and 15 to 30 were selected for each town depending on its size. A group of 10 others was selected for each town as second choice to replace those which could not be used from the first sample. The names of the owners were compiled and a preliminary call was made. Following this visit, a map of each farm was made by using a sketching board and compass, measuring distances by pacing. Blue prints of these were given to the soils expert who prepared on each blue print a detailed soil map of the farm represented. Each farm was plotted upon the U.S.G.S. topographic map for the determination of slope. A preliminary record was taken in the meantime showing land utilization on each field mapped. Other data were obtained such as condition of roads, distance to market, description of buildings, etc. From the map, acreages of each kind of land cover and use were determined for each soil type by planimeter. Pasture was classified into different capacities and expressed in terms of an equivalent pasture type. Detailed records were made on 140 farms showing yields on each field, fertilizer used, capacity of pasture, real estate, equipment, and livestock inventory at the beginning and end of the year, names of dealers to whom products were sold, amount of products sold and used, income from the farm and other sources, expenses, man, tractor, and truck

hours of labor used in different operations, etc. The analyses include a consideration of the relationships between soil characteristics and income from dairy farms. Detailed correlations are now in progress. The important variables are being determined by trial.

The work being done by a certain group of economic geographers should also be given some attention. In rural areas of southern Wisconsin, in southern Michigan, and in Massachusetts, technique is being developed in the mapping of the physical complex and the use of the land. All data are recorded on a single map by means of a clever coding system. These surveys are followed by tabulations and association analyses, on the basis of which area percentages of different physical combination groups which are devoted to different uses are calculated. Some of these geographers are beginning to develop brief schedules for obtaining data from farmers. In one case a study of the tobacco industry has been made in which many detailed agricultural economic data have been compiled concerning that industry and have been analyzed with respect to land use. There is a tendency among the geographers to increase the amount of economic data collected. The twenty-five-page printed questionnaire now being used in the Vermont survey carried on by the Agricultural College in cooperation with the U. S. Bureau of Agricultural Economics indicates the extent to which such inquiries may go.

Land utilization surveys now under way in Colorado are similar to those in the East except more attention is given to the grazing problem, to federal land policies and the mapping of land use by the aid of plant indicators. A rather interesting point was brought out in the studies conducted in eastern Colorado, in that the very farm management data collected to measure the degree of submarginality on different types of land were used to change the conditions of the farmers by suggesting improved practices which were adopted. In Montana and in Washington, the dead line between economic wheat production and no economic use is being shifted about by climatic changes, price movements and by the indomitable determination to resist defeat on the part of farmers who are at each wave of adversity contriv-

ing new devices to aid them in reducing costs per unit of product. Farm organization studies in the vicinity of this shifting dead line takes on many aspects of the land utilization studies previously described.

In the irrigated regions, three distinct types of investigations have been carried out in recent years or are in progress or contemplation at the present time. These investigations include those conducted by the U. S. Bureau of Reclamation, those carried on by the College of Agriculture in California, and projects now under way under a cooperative agreement between the U. S. Bureau of Public Roads, the Oregon State College and the State Engineer of Oregon. The object of the surveys just about to be inaugurated by the Bureau of Reclamation is to determine the economic and social benefits of the federal projects, to ascertain what steps should be taken to use the opportunities afforded, to determine what kind of agriculture should be promoted in these projects, how much of the unsettled, undeveloped land is sufficiently productive to justify settlement under present agricultural conditions and what is the best procedure to take with respect to the unproductive land.

The California studies were conducted to determine the causes of the wide disparity between irrigation construction and agricultural development and to provide a basis for sound farm land appraisals. The Oregon surveys were conducted to form the basis of refinancing certain projects which had met with difficulty in the payment of their financial obligations and to determine the feasibility, in certain cases, of proposed new development. In Washington, much attention has been given to the feasibility of the proposed Columbia Basin Project.

In considering all such investigations, a careful distinction should be made between the types of method necessarily used by the practicing technician in arriving at decisions and procedures in the face of immediate need of information for executive decisions on the one hand, and the type of painstaking scientific research on the other, which in time should provide these technicians with badly needed measures of the economic significance of the various physical and economic factors.

AGRICULTURE VERSUS URBAN ENTERPRISE

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The struggle between the interests of country and city for economic and political rights and privileges is as old as ancient Roman civilization. In our own national history it dates back to the constitutional cradle. Policies regarding tariff, land disposition, internal revenues, labor distribution, monetary standards, and regulation of public utilities have been major issues between agriculture and urban enterprise, with ensuing factional economic and political disturbances and in some instances violent discontent.

The recent prolonged depression in agriculture which is gradually fading into the distance of time is but another supplement to this long record of institutional struggle between farm and factory.

The Physiocratic Period

From the inception of our national independence to the end of the Civil War, economic society was predominantly interpreted in terms of the physiocratic doctrine—that economic society was fashioned after nature's own provision and that true wealth inhered only in land and in its raw products. Benjamin Franklin projected the idealism of the French School of economic thought upon a virgin domain where the sphere of supernationalism, the submission of rationalism to the authority of the Gospel, still held sway over the ways of wealth acquisition. Thomas Jefferson and Albert Gallatin, both possessed strong sympathies for agriculture. Their legislative consideration aimed at a balance between both interests—the fear of scarcity in bad years, with the fear of abundance without a market or without profitable consumptions. Jefferson advanced the idea that an equilibrium between agriculture, manufactures, and commerce was essential to political independence.

The Tariff Issue

The realization of direct application of Hamiltonian protective theories to manufacturing enterprise in the tariff act

of 1816, kindled the fire of diverse economic interests of the South and the East. For two score years the protective tariff occupied the mind of the people as the foremost issue of economic and political consequence. Eastern manufacturing interests raised their standards again and again upon legislative disunity of southern planters and northern farmers. Strong and persuasive leadership of the landed interests under John Randolph, Madison, and Calhoun fell before even greater political wisdom of city interests.

In vain did Randolph plead that the Government was "devising plans and bestowing premiums out of the pockets of the hard-working cultivator of the soil." The farm interests of the North relied upon the home market pledge of their urban cousins to safeguard their general interests, to enhance production of the soil, bring under cultivation more land, create a demand for improved land, and raise the price of land.

James Madison reports in a memorandum the ever-increasing division of interests of farmer and manufacturer—their future spheres of "mutuality of interests in the interchanges useful to both"; their opposition of interest in the difficulty of adjusting and equalizing "the imposition of taxes whether internal or external." Said Madison¹—

"Manufactures grow out of the labor not needed for agriculture, and labor will cease to be so needed or employed as its products satisfy and satiate the demands for domestic use and for foreign markets. Whatever be the abundance of fertility of the soil, it will not be cultivated when its fruits must perish on hand for want of a market."

But Madison carried his argument even further—that not only nationally, but also locally, within each State, will agriculture and manufacturing enterprise struggle for labor, equalization of taxation, and other mutually desired factors, all sources of discord between these two types of interests.

The moral obligations of the Compromise Tariff of 1833 had remained out of reach of political schemes of protectionist aspirations and when by provisions of the Act further reductions in duty became ineffective in 1842, protective changes ensued only upon iron and cotton goods. As

¹ Madison, *James Writings* (Gaillard Hunt, ed., N.Y., 1910) Vol. IX, p. 525.

long as the plantation interests steered a political course under the leadership of Calhoun, the economic position in this quarter remained secure. Calhoun questioned the renewed clamor of the manufacturing interests—

“As much as the manufacturing interest is embarrassed, it is not more so than the cotton-growing interests; and as moderate as may be the point of the one, it cannot be more moderate than that of the other . . . I ask those who represent the other great agricultural staples—I ask the great provision interest of the West, . . . if they have been asked whether they can afford to give higher prices for their supplies?” (Speech on the passage of the tariff bill, August 5, 1842.)²

Land Disposition

In the East, farming population, weakened under the strain of western competition, had approached “economic density”; i.e. the point of pressure upon the means of subsistence measured by the fertility of the margins of cultivation, giving rise to renewed abandonment of farms and search after virgin stakes in the West. Lack of statistical researches made it impossible for men interested in productiveness of crops and destructiveness of soil to demonstrate the constant deterioration of the soil. Such enumeration as was carried on for agricultural purposes was rather an investigation in the interests of rural industry, of manufacturers and commerce. “The careful and critical study of agriculture, with a view to make it the foundation of a wise system of political economy, has never been undertaken by American statesmen,” so wrote Daniel Lee, a contemporary observer in 1852; “hence, their statesmanship and political economy have been at war with the true principles of tillage and husbandry from the first settlement of this continent by Europeans.”³

The real driving power in the disposition of the public domain was a citified contest among workers and businessmen, among landless and landowners. Farmers had no voice in the issue. The homestead bill was settled for them by political and industrial congresses and legislatures, political parties, workmen’s unions, professional reformers, and newspapers .

² Calhoun, John C., Works (R. K. Cralle, ed., N.Y., 1874) Vol. IV, pp. 178-180.

³ Lee, Daniel, “Progress of Agriculture in the United States” (in Report of Commissioner of Patents, 1852, Part II, Agriculture, p. 4).

The anti-agrarian demonstrators believed in the motive of enlightened self-interest and were equipped in upholding the realism of the individualistic régime. They considered the acquisition of 1,000 acres of land the right to possess \$1,000 worth of property. They saw in the homestead bill a threat to impair the real estate holdings of private individuals, to debase the liens of creditors on land held in mortgage, to check the enterprise of individuals and to deprive industry of its chief investment for surplus earnings. Labor looked upon land as the "balance-wheel of wages"; capitalists espoused land as the recompense for their efforts, a limitation of which interfered with the rewards of industry. In their opinion, there were already too many farmers in the country and by further contriving to increase the cultivated area, making labor scarce and high for industrial enterprise of the East, competition for food among the consumers would be destroyed and the agricultural interests made to suffer for want of a market. The opposition to the homestead bill feared a loss of control over the wage of labor which by the stipulated price of land would cause a further lessening of profits in manufacturing enterprise.⁴

Post Civil War Disturbances

After the Civil War, rising prices maintained industrial activity and employment upon an unabated course until 1866 when Congress authorized the contraction of the inflated currency. Eastern creditors looked with satisfaction toward an appreciated dollar which the farming debtor of the West would be obliged to pay upon extensive farm improvements committed in legal-tender dollars of depreciated greenbacks. Prices began to tumble; business depression set in; all around unemployment ensued among the vast army of workers who had supplemented city population in the period of industrial boom.

The repeal of the burden of internal revenue taxes which had been made necessary to meet war expenditures was the first relief accorded popular demand. But the disregard of political and financial economy in the readjustments of tax impositions created sectional disturbances. The west-

⁴ Commons, J. R., ed., *A Documentary History of American Industrial Society* (Cleveland, 1910), Vol. VIII, pp. 68-70, 76.

ern agricultural States charged the Federal Government with discrimination in internal revenue assessment by taxing distilled spirits \$2 per gallon, a tax of about 800 per cent on the manufacturing cost of the product in question which was threatening a decrease in the consumption of grain. About this period, grain was the principal source in the manufacture of "burning fluid," finding use in practically every household in the country. Petroleum had not as yet been introduced for this purpose; hence the repeal of taxes on mineral oils endangered a lucrative source of income of the grain growing western States. The extent of this market may be estimated by the production of distilled spirits which in 1860 was more than 90,000,000 gallons. The city of Cincinnati, it was stated in 1864, required an equivalent of 12,000 bushels of corn in distillate every twenty-four hours.

Another protest by western farmers aimed against discrimination in favor of manufacturing interests on the tariff. The West charged that it was "being consumed by the good of New England and Pennsylvania," that the "Civil War tariffs had carried duties to a point where they threatened to strangle the agricultural and producing interests of the Mississippi Valley."⁵

After the panic of 1873, price decline and general depression in business renewed conditions following the year 1866. The cleavage between the East and the West became more pronounced with President Grant's veto of the "Inflation Bill of 1874" and the subsequent Resumption Act of 1875 which provided for further contraction and specie payment after 1878. Among the farmers a pyramid of grievances arose out of "bigger dollars" and twenty-cent corn—low purchasing power, high prices of manufactured goods, heavy interest on mortgages, unjust transportation rates and oppressive taxation. Widespread discontent set in. The agrarian movement was the result.

An Interpretation of the Agrarian Movement

From beneath the sporadic outcrop of economic depression and financial panic, agriculture was experiencing the

⁵ Cole, Arthur C., *The Centennial History of Illinois* (Springfield, 1919), Vol. III, p. 864.

cumulative effects of intangible forces inherent in it by its foundation in land. Progressive changes toward rationalization of management were much slower in agriculture than in manufacturing enterprise. The competitive impulse lodged with freely moving production factors of capital and men in the factory and the city. Here the shifting from one settled policy to another kept pace with the improvement in machinery and transportation. Here the profit motive made the factory more or less subject to methods of trading, of clearing a way for less resistance, of scrapping the tool to make room for a new labor-saving device. The transition of manufacturing enterprise from local and territorial decentralization to centralized organization was running a close parallel with railroad construction. Capitalism fostered urbanization directly, wherever the interests of the entrepreneur decided to operate; indirectly, wherever and whenever laboring forces were following the rise and growth of the factory to gain livelihood by them. Together with the factory, complimentary industry, such as machine construction and repair shops, were knitting a more efficient technical organization. Effective competition forced progressive improvement in manufacturing industry, made possible by flexibility of productive factors, inventions, rapid development of the country and a large number of hunters after the alternative opportunity. In manufacturing industries this hunt after more profitable opportunities was relentless. The swiftly changing current in technical improvements demanded quick action and profit results. Here competitive struggling and juggling figured in terms of comparative values, of wants and effective demands—production at lowest cost, rapid turn-over, large output, the widest margin of profit!

Otherwise with the rural community! Here also competition was effective, but it was a different sort of competition, dealing in the main with land, a series of kinds of land. The prevalent philosophy of American settlement was based on the idea that all land should be put into farms—good, bad, and indifferent land. Gradually, as the fertile lands of the Mississippi Valley were settled, the abandonment of “improved lands” in the East was taking place.

But it was only an abandonment in part, wherever the lowering of the margin of cultivation was felt keenest or whenever wisdom and foresight overcame sentimental attachment to the land and caused people to seek fortune otherwise. In the East, many good farm operators were working poor marginal land; in the West the margin of cultivation was an operating defect, a question of indebtedness, of land speculation which involved many farm operators and compelled them to become marginal men on account of over-mortgaged land and low prices of farm commodities. In other words, a fertility margin and a financial-management margin rendered agricultural conditions especially precarious when farm commodity prices began to decline after the Civil War.

A second cause, cumulative in its effect over a long period, was the slow improvement in agricultural technique. The homestead policy of farming had brought about a widely dispersed mode of settlement, of isolated farm units and distant connections with centers of population. Separated thus by a natural boundary, the individual farmer was compelled to solve his own problem of practical management. Isolation held him at his old habits and to his empirical methods of soil culture. Whatever improvements generated locally, frequently retained the character of "local practices" by experience. The transition in farming from the wooden mould board to the steel plow, from the sickle and scythe to the mower and reaper, from hand to horse power, grew of necessity from Civil War conditions, of labor shortage and to a lesser extent from improved transportation facilities and methods of marketing new farm implements.

The process of constructing a labor-saving farm implement so that it could be of practical and reliable use entailed many years of experimentation. The course of divesting the farmer of his heir-loom tools in favor of machine methods of greater efficiency took still longer. The emergency overtook it. It speeded it on to ever-expanding crop areas after the Civil War. It reacted upon the farmer when the market set in for a decline.

The access to cheap land was a third obstacle to improved

tillage and greater labor efficiency. Competition to rise above the margin of cultivation was not necessary, for new virgin land was lying beyond the next door neighbor, available for better crops by the same method of tillage. While the flexibility of competitive productive factors stimulated economy of power and labor in urban communities, the competitive order of the land well nigh eliminated this tendency—for the abundance of good land beckoned the settler to a system of soil expenditure and a saving of his bones. The shifting from one plot to another by a rule of thumb, the unsettling of worn-out soil and the occupation of less resistant toil-absorbing resources, was a timely economy conditioned by nature, by agrarian policy, and individual saving of effort. *Free land competition and free urban competition effected different modes of economy—the one to save labor by sacrificing land; the other to save labor by transmitting permanent effort into the machine for increasing production.*

Neo-mercantilism

The inception of corporate enterprise in the sixties terminated the physiocratic principle which permeated American public life. At the decision of arms, the democratic traditions of Puritanism superseded the planter's aristocracy, handing over to urban capitalism the political intelligence of rural social culture and propagating in the cities a field of political dominance. The political representation of the landed interests of the South who lived for politics and for the State, was replaced by the domination of professional politicians who live on politics and on the State. With southern agrarian leadership eliminated, agriculture lost much of its political prominence. In economic ascendancy, manufactures were encroaching upon the premier position of agriculture—at first slowly, then step by step, and during the last decades of the nineteenth century by leaps and bounds.

Corporate Enterprise

The removal of governmental restraint from business activity after the Civil War freed the reins of competitive enterprise anew, leading to ruinous competition in com-

merce and manufactures over the sharing of resumed industrial development. Time and place were most favorable to the inception of the corporate institution—the unrestricted law of the land regarded “what was not forbidden as silently permitted; to consider a right once granted as irrevocable.” Cloaked by an impersonality, the corporation invaded rural and urban community alike, bidding for concessions in the public domain and congregating manufacturing units into monopolistic pooling agreements. To the farmers’ organizations, the corporation was a creature of the law, or perhaps better, the offspring of no law, of legal improvisation which it was for the law to alter or to withdraw. So long as the geographic area offered concessions and resources of timber, mining, and agricultural lands, of accumulating property by pyramidal organization, legislative influences and political corruption, the corporation displayed its power in the extensive field of the public domain. With the exhaustion of landed resources as the field of acquisitive control, corporate enterprise entered upon the arena of solidifying captured concessions into trusts, of gauging internal revenue provisions and fashioning protective tariffs to their advantage.

Trade Associations

Coincident with the formation of corporate organization, commercial and manufacturing business enrolled its enterprise into membership of trade associations, to keep individual industrial units from “killing each other,” and to seek protection from public clamor behind a veil of innocent cooperative effort as “resoluting bodies.” Emmet Hay Naylor, in contributing a brief sketch on trade association history in the United States Department of Commerce publication on “Trade Association Activities,” records the events of its earliest objectives “to correct some mutual evil or meet an emergency, but never because of a recognition of the necessity of constructive development of an industry.” As the subtle practices of price fixing, limitation of output and territorial division of production fell victim to internal wisdom and dissention, and external laws and decisions of restraint, trade associations, instead of dis-

solving, gained greater confidence from within and accelerated their growth with each opportune recovery from business depression.

The lessons resolved upon benefits that were to be derived from cooperative effort in business stabilizations; of practices within the law, whether or not it sticks or is worth while stretching through fact-finding; and in meeting unhealthy legislative regulation interfering with public welfare. The weight of intangible benefits derivative from trade-association membership in avoiding legal entanglements and in defining the limits of the "twilight zone," indicates the sensitive mechanism of the new industrial order which, says Franklin D. Jones, "is worth to each member at least one-half the salary of an office-boy."⁶

With the turn of the nineteenth century agriculture had definitely tendered first place to manufactures. Politically and economically agriculture had become an adjunct to a greater solidarity of urban industrialism. The conditions surrounding manufacturing enterprise at the beginning of the twentieth century were more favorable than ever before. The price level which had been declining since the Civil War had taken an upward turn in 1896. The Dingley Tariff had closed the door to foreign competition at home. The Act of 1900 created the gold standard currency. Trade associations had passed the stage of "their beginnings" with definite success and the tacit understanding that it pays to be organized for collective effort.

The attainments of trade-association aims, to act as "agencies for regulating the public relations of private concerns" did not descend like a windfall, over-night. The legacy inherited by industrial enterprise from its unruly forebears of the last quarter of the nineteenth century passed through an evolution of legal and ethical lessons by trial and error, by test and retest, in order to "harmonize economic liberty with public security." The enactment of anti-trust legislation with its pretentious laissez-faire policy and its doctrines of "unfair competition" and "conspiracy to monopolize," for a long time hindered trade as-

⁶ Jones, Franklin D., *Trade Association Activities and the Law* (N.Y., 1922), preface and p. 241.

sociations from pursuing the task of adjutant services which experienced business judgment and foresight deemed wise to dictate. Representative bodies of government charged with the maintenance of fair trade practices and the safeguarding of public interest from exploitation were slow to differentiate between hostile and friendly rivalry in business relationship or failed to comprehend industrial changes in plant and in commerce. Adverse decisions delivered by courts of justice against new trade developments, stating that they did not meet the interpretation of the legal statute, frequently found other ways at the hands of greater legal mastery of captains of industry over political-legislative enactment and court interpretation.⁷

Cooperation in Agriculture

Agriculture, during the final lapse of the nineteenth century had become overdeveloped; overdeveloped in the sense of profitable productive area and unorganized individual competitive business enterprise. Labor-saving machinery and the exploitation of virgin soil delivered larger quantities of food than any "home market argument" ever expected to sustain. The commercialized interests of the American farmer reached out beyond his homestead. They linked him with a continent, with the market of the world. Said Max Weber—⁸

The old economic constitution asked: How can I give, on this given soil, work and sustenance to the greatest possible number of men? Capitalism asks: How can I produce as many crops as possible for the market from this given soil with as few men as possible.

Foreign countries were looking toward greater self-sufficiency by developing their own agriculture through intensive methods in production, cooperative marketing, and credit facilities, and by raising a tariff barrier against overseas competitors. Too much land was under cultivation; too much labor was engaged in crop production; too much capital was flowing into unproductive channels of the soil.

An expensive marketing mechanism was combined with

⁷ National Industrial Conference Board, *Trade Associations, Their Economic Significance and Legal Status* (N.Y., 1925), pp. 28, 31-33, 63, 119-120, 126a-126b 308.

⁸ Weber Max "The Relations of the Rural Community to Other Branches of Social Science." (Congress of Arts and Science, St. Louis, 1904), Vol. VII, p. 729.

wasteful marketing methods and further burdened by frequent oversupply of farm commodities that depressed prices and wiped out profits. The painful experience of the Grange cooperative movement still lingered in the farmers' mind. Slowly, however, the farmers regained confidence. Urban business interests had organized successfully; first locally, then nationally. They had broken the way by sloganized effort. They had enlisted merchant, manufacturer and financiers and established city and town "home rule." Would the farming interests remain unorganized "at a fatal disadvantage in the purchase of agricultural requirements, in the sale of agricultural produce, and in obtaining proper credit facilities"? Sir Horace Plunkett pointed to one "weak spot in American rural economy" when he said

American farmers have still to learn that they are subject to a law of modern business which governs all their country's industrial activities—the law that each body of workers engaged in supplying the modern market must combine or be worsted at every turn in competition with those who do.*

The cooperative marketing movement has gradually, but with ever-increasing force, abandoned political and social objectives. More and more, the question of what is economically most desirable has become the goal. Step by step, the industrial aim of economic efficiency has encroached upon a sympathetic philosophy of self-complacence, in collective as well as in individual farm operation.

Agriculture Without a Policy

The movement of population from country to city, stimulated by a more or less unremittant protective tariff policy over a hundred years, has accomplished a more rational approach toward the farm management problem. This approach, however, has not been pursued in terms of a policy in rural economy, but has been a condition rather of individual initiative and self-help through mechanization of agriculture, applied scientific research and education. Agriculture in the United States has never known a policy. The only interests alive toward a policy have been urban

* Plunkett, Sir Horace, *The Rural Life Problem of the United States* (New York, 1910), p. 114.

industrial interests. Their policies have taken a rational profit approach through legal sanction on the part of government or closely-knitted trade-association cooperation or independent action by way of laissez-faire in order to obtain a desirable result. A policy of tariff protection has been made a necessary condition for profitable manufacturing plant operation—to make wheels turn around, shuttles fly, gears rotate and steel furnaces breathe at a profit. A policy of interchange of patent rights and credit information, of regulating competition by "the rule of season" has been found an acquisitive function through the offices of trade-association clearing-houses. A policy of independent laissez-faire action in the settlement of labor disputes, of competitive arbitration, has put additional advantages at least sacrifice and greatest individual gain.

Any policy fostered by competitive business enterprise can only be a gain-seeking policy, a motive aiming at savings or profits through systematic method of approach, control, and action. Policies in manufacturing and commercial enterprise have been evolved by competition, by beholding relative losses incurred through the absence of a gain-rendering policy. To this extent cooperative marketing in agriculture is pursuing a policy, a localized action for better prices in return for a better product. As a policy, however, cooperative farm-commodity marketing falls short in controlling the fundamental approach—crop production—which is subject to human effort as well as to cosmic influences. The combination of these two factors deprives the saving-seeking impulse of its potency, at least it renders unusual risk in obligating the cooperator to share in relative losses.

The institutional factors of the nineteenth century underlying the adversity of interest of agriculture and urban industrial enterprise have been projected into the contemporary age. Wrangling over the tariff, reclamation, taxation, immigration, public utility regulation, and monetary policies among diversely affected economic groups, still flourishes within and around the political arena. Historically, the climax of 1921 and its aftermath of contesting interests of land and city for an equalization of economic ad-

vantage, is merely a repetition from the past. No "fair price" reward is promised by the future. Readjustment of a natural adversity between agriculture and urban industry is solved only through the individual's ability to forego sacrifice and to capture relative price gains.

The lingering depression in agriculture of the last seven years has projected the economic and political dominance of the city. Beneath its organized dictates in legislation and economic policies, American agriculture is shaping its future. Today an agricultural policy is a consideration in the light of the city. Whenever agriculture finds itself about a green table, its benefits are directed toward the city. Talk about the city and interests are for the city, Whether in pessimism or in optimism, Oswald Spengler in his "Decline of the West" is not far from the truth—

An epoch begins when the city develops so immensely that it needs no longer to defend itself against the land . . . but to the contrary that the land . . . leads a hopeless defense against city autocracy—intellectually against rationalism, politically against democracy, economically against money.¹⁰

¹⁰ Spengler, Oswald, *Der Untergang des Abendlandes* (München, 1922), 2ter Band, "Welthistorische Perspektiven," p. 114.

FARM BUDGETING IN GERMANY

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The interest recently evinced in Farm Budgeting in the United States¹ is significant as a forward step in the solution of farm management problems. This is all the more noteworthy since it is an independent development and apparently has no connection with similar work in Europe.

German Farm Management has long recognized the value of farm budgeting in the "Voranschlag" or advance estimate. Although originally designed for another purpose (land valuation) the use of a budget plan, set up in advance of operation, is to-day, in Germany, looked upon as the logical procedure for predicting probable farm earnings.

The farm budget is based upon physical data and prices of the past interpreted in the light of conditions that appear probable in the future. In the case of physical data it is an advance estimate based upon past production performances and the production and practice changes contemplated in so far as these and the resulting production can be foreseen. In the case of prices it is the prices of the past modified to the extent that conditions affecting prices can be foreseen. From these are computed the probable returns for the factors available.

The valuation of lands and farms in Germany (*Taxation von Grundstücken und Land-Gütern*) had its beginning in the commutation of feudal tithes and dues from payments in kind to money payments. These commutations, running through the centuries, gave rise to a voluminous literature on valuation, appraisal, sale, leasing and kindred subjects. As early as 1663 appeared a work by Wienschau, "Memoriale oeconomico practicum politicum," covering valuation. This was followed by other works on appraisal and valuation. von Pabst, writing in 1881,² and treating this subject,

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¹ Farm Budgeting, U.S.D.A. Farmers' Bulletin No. 1564. Also numerous bulletins on "Systems of Farming," "Farm Organization," etc., published by various state agricultural experiment stations.

² von Pabst, H. W. "Die Landwirtschaftliche Taxationslehre," 3rd edition, Berlin, 1881.

cites 170 works which appeared in the period of 110 years from 1771 to 1880 inclusive. Further, he insists that he has cited but few of the official and legal instructions covering the changes incident to the abolition of feudalism.

It is of importance from the viewpoint of Farm Budgeting that these early appraisers (*taxators*) attempted to base the value of land upon its earnings. Thus Von Schweder³ lays down regulations for land valuations based on its earning power plus certain considerations growing out of the then existing feudal relations. This earnings value (*Ertragswert*) was computed from an estimate of probable earnings, budgeted in advance.

In general this advance Farm Budget for valuation, called for a consideration of (1) the physical situation surrounding the farm or estate involved, (2) the computation of possible physical production, (3) the determination of the quantities of the physical production available for sale, (4) estimation of selling- and buying-prices and (5) the computation of the expense involved. From this, the net return, upon which the earnings value (capitalized net return) was based, was then computed by simple subtraction.

Thus von der Goltz⁴ in setting up his advance estimate for computing the probable returns upon which to base his capitalized valuation calls for:

1. Information and description
2. Determination of farm plan
3. Determination of gross return
4. Determination of operating costs
5. Computation of net returns and capital value

Lehnert,⁵ (Karl) Birnbaum,⁶ von Pabst⁷ and other writers on valuation and appraisal similarly set up the Advance Budget for earnings determination.

To Albrecht Thaer, the Hannoverian physician, who at the beginning of the nineteenth century, so markedly influenced German agriculture, is due the credit for presenting forcibly this idea of Advance Budgeting as a means of plan-

³ von Schweder, Chris H. "Anschlagung der Güter," 1716.

⁴ von der Goltz, Th. Fr. "Die Landwirtschaftliche Taxationslehre," Berlin, 1903, p. 411, 3rd edition.

⁵ "Landwirtschaftliche Taxationslehre," 1885, p. 59.

⁶ "Die Landwirtschaftliche Taxationslehre," 1877, p. 156.

⁷ Taxationslehre, 1881, p. 149.

ning the farm business. It was in keeping with his concept of farming as a private economic enterprise, operated for gain, which should be judged by the net returns. It was to be made possible by his newly developed procedure of detailed cost and enterprise earnings accounting. In his "Grundsätze der rationellen Landwirtschaft,"⁹ Thaer sets up four samples of advance labor estimates for large estates. These cover the work to be done, its nature, the time when to be done, relative importance, etc. He details the number of days available for spring, summer, autumn, and winter work and determines the standards of plowing, harrowing, and other field work, hauling and miscellaneous work. He shows by example how the number of laborers and work animals is to be computed.

From his "Leitfaden zur Allgemeine-Landwirtschaftliche-Gewerbslehre,"¹⁰ we quote—

"Advance estimates regarding the returns and the use of physical goods as well as the money for the next business year, it is suggested, be called Budgets (Etat). These are based upon money sums. They represent money values to be achieved by a specific time. They include:

Money Budgets—

1. Cash outlay expected for goods and services
2. Cash receipts anticipated from sales
3. Comparison of receipts and outlays to determine time of each so as to be certain that supplies are available to cover needs.

Budgets in Kind (Physical Goods)

1. Advance statements of physical production expected from fields, meadows, livestock, etc.
2. Estimate of labor necessary, number of workers needed and amount of work stock.
3. Estimate of feeding stuffs necessary for man and beast.
4. Computation of balances of same remaining for sale."

More recent instances of the Advance Budget idea for farm planning, are those of von der Goltz,¹⁰ Birnbaum,¹¹ Pohl,¹² Aereboe,¹³ Güngerich,¹⁴ and Laur.¹⁵

von der Goltz requires as an integral part of his farm accounting the following advance computations:¹⁶

⁹ Thaer, Albrecht. Berlin, 1809, p. 116.

¹⁰ Thaer, Albrecht. "Leitfaden zur Allgemeine Landwirtschaftliche Gewerbslehre," 1815, p. 229.

¹¹ von der Goltz, Th. Fr. "Die Landwirtschaftliche Buchführung," 1866.

¹² Birnbaum, Karl. "Katechismus der Landwirtschaftlichen," Leipzig, 1879.

¹³ Pohl, Johann. "Landwirtschaftliche Betriebslehre," Leipzig, 1885.

¹⁴ Aereboe, Fr. "Landwirtschaftliche Buchführung," Berlin, 1898.

¹⁵ Güngerich, A. "Landwirtschaftliche Buchführung," 2nd ed. 1908, 3rd. ed. 1924.

¹⁶ Laur, Ernst. "Wirtschaftslehre des Landbaus," Berlin, 1920.

¹⁷ von der Goltz, Th. Fr. Op. cit. p. 8.

1. The Cultural (crop) Tables
2. The Feed Budget
3. The Supplies Budget
4. The Money Budget

von Seelhorst, editing the 12th edition of v. d. Goltz "Buchführung" (1920) amends this by including a "Harvest" Budget and says further,

"The five advance estimates are differentiated from all other parts of the farm accounting in that in them are set up items not as past happenings, but instead estimates made in advance, covering important measures and returns expected to appear in the course of the year. In every orderly business these advance estimates (Budgets) are so necessary and must be made anew so regularly, recurring at practically stated intervals every year, that one may rightfully consider them as an indispensable part of the farm accounting."

Aereboe, one of Germany's present day Farm Management leaders, writing in 1898 said:¹⁷

"If the farmer desires to have the certainty that the course of his farming in the coming accounting year be undisturbed, then he must provide that the consumption of his supplies is properly distributed; that, for example, the food supplies suffice and achieve the most purposeful use. He must provide that his cash means reach the demands in every case, etc.; for this he needs a series of advance estimates (budgets) which seek to weigh and judge the conditions of the coming year."

Güntherich¹⁸ similarly lays stress upon the advance estimates required for rational and economic operation. He writes:

"For the operation of a farm business it is necessary that the business manager seek to acquire, in advance, the greatest degree of clarity over the business course of the coming year. He has primarily to see to it that the harvest is disposed of correctly and that he has always on hand sufficient cash to meet the necessary disbursements—such reckonings have such great advantages for the manager that in no case should they be left undone—A budget covering the individual business expenses is just that which gives the advance estimates value, for it is these expenses which demand of the farmer advance decisions which have a longer duration."

Each of these writers presents a series of Budgets similar to those recommended by von der Goltz.

The various ideas involved in the theoretical advocacy of the farm budget are crystallized and made available through the budget blank forms provided by the Farm Accounting

¹⁷ Aereboe, Fr. Op. cit., p. 138.

¹⁸ Güntherich, A. Op. cit., p. 118.

Office of the German Agricultural Association.¹⁹ This booklet of 20 pages includes:

1. Crop Production Advance Estimate
2. Livestock Advance Estimate
3. Feed Advance Estimate
4. Seed and Fertilizer Advance Estimate
Green Feed and Fertilizer Advance Estimate
5. Labor Advance Estimate
6. Purchases Advance Estimate
7. Sales Advance Estimate
8. Buildings and Permanent Improvements Advance Estimate
9. Other Disbursements Advance Estimate
10. Money Advance Estimates

This practical unanimity of German Farm Management workers, on the idea of the advance budgeting of probable earnings, and their concept as to its prosecution, is further evidenced in the purposes of Farm Accounting, as stated by them.

Thaer suggested that "the art of proper reckoning is equally as important for the farm operation as is the art of preparing the fields well." In Thaer's opinion, accounting is necessary in order (1) to survey what the farm business has brought in from year to year; (2) how much the net worth has thereby increased and (3) *to provide an analysis of all the internal parts of the business by furnishing "guide posts pointing to improvement in this or that."*²⁰

The writers following Thaer similarly insist upon accounting for this three-fold purpose of

1. Records for control in operation
2. Computation of earnings
3. Furnishing information for testing and improving the business.

Thus we find Seelhorst saying²¹

"The farmer wants not only to see the profitableness of his total operation. He wants also to draw conclusions from the results of his accounting as to the satisfactoriness of his business organization and operation, and if these are

¹⁹ Voranschlag Heft. No. 287, der Buchstelle der Deutsche Landwirtschafts Gesellschaft, Berlin.

²⁰ Thaer, Albrecht. "Beiträge zur Kenntnis der englischen Landwirtschaft," 1801.

²¹ In von der Goltz, "Landwirtschaftliche Buchführung, 12th revised edition, by Seelhorst, Berlin, 1920.

not satisfactory at the same time to have bases for the improvement of the operation.”

Stieger²² similarly requires of the Farm Accounting that it

1. Support the farmer's memory
2. Determine the farm earnings
3. *Provide "guide posts" for the most profitable organization and operation*

This latter, he says, “makes farm management dynamic.” From Waterstradt²³ we get the statement:

“Farm accounting has the job of reporting in numerical fashion all transactions or intercourse with the outside world and with the inner parts of the farm so clearly that at the end of the year, or whenever wanted, it can give a clear picture of the evolution. Granted that this is historical and backward in its scope, *still it is the only way we can get fundamental material for the future-looking computations.*” [Reiterating his stand that the Farm Accounting shall furnish the information for the advance estimates he insists,] “The problem of farm accounting consists primarily herein that it shall, in every case give to the farm in question fundamentals suited to its character, *and sufficiently accurate to serve for its management calculations.*”

Aereboe also sets up the three-fold purpose of farm accounting and specifically calls for the calculation of the profitableness of proposed measures of production.

1. Accounting shall furnish the farmer a clear picture of the total returns of his business and his income.
2. It shall support the farmer in his supervision of the component parts of his business in that it contains the current information of their kind, number and value.
3. It shall, insofar as possible, acquaint the farmer with all those figures which he needs *for the most exact deliberation* (calculation) over the questions which arise in the business regarding the *advisability* (profitableness) of old and new business measures.”

And from Laur we receive again these specific objectives for Farm Accounting in which the advance calculation or Budget concept is uppermost.

“The numerical determination of the success of the farm business is the problem of Farm Accounting. The money economy accounting has, first of all, to measure the amount by which the success of the business is expressed. In addition, it must record the items of property and the business transactions.

²² Heft 64, D.L.G., Berlin, 1901, p. 33-34.

²³ Waterstradt, Franz. *Wirtschaftslehre des Landbaues*. Stuttgart, 1912.

A cameralistic accounting which does not use money records at all can report the latter also. But a judgment regarding the success of the business can only be obtained from the money economy accounting. The more comprehensive it is, the more detail into which it is divided and grouped, in so much greater becomes its utility. It expresses itself above all in the collection of experiences. The more the personal observations of the farm operator are supported by numerical foundations, the more can the past be teacher for the future. In the calculation (advance budgeting) the personal experiences of the farmer combine with the accounting results for a deeper analysis of the past and for the numerical computation of the future (budgeting or advance calculation).²⁴

Despite this practical unanimity as to the importance of the Advance Budgets and the use of Farm Accounting as a source of the necessary data therefor, there is and has been in Germany, a controversy as to the proper procedure to apply in this accounting. Thus Laur conceives the detailed cost and enterprise earnings accounting solely to be the satisfactory procedure for furnishing the information for testing the validity of enterprise combinations, efficiency within the enterprise and the effectiveness of the organization as a whole. To quote:²⁵

"The most searching method of following numerically the results of the productive effort and the presentation of the success of the business in terms of reckoning is found in the "doppelte" (detailed cost and enterprise earnings) accounting. By altering the figures of the past in line with the advance estimate of the future, the "doppelte" farm accounting also offers the most appropriate basis for an advance calculation of the farm returns. Whether it be questions of the farm organization, the business organization or the farm operation, the "doppelte" accounting is always an inexhaustible source of information for estimating the gross returns and the expense."

From Laur's²⁶ other writings we gain a further picture of his insistence upon the use of the findings of this cost and enterprise earnings accounting for guidance as to expansion, contraction or elimination of enterprises and the use of production cost data as a basis for purchase and sale decisions and for decisions as to measures of production to employ.

This adherence to the detailed cost and enterprise earnings accounting is vigorously opposed by the group which,

²⁴ Laur, E. Op. cit., p. 24.

²⁵ Laur, E. Op. cit., p. 252.

²⁶ Laur, E. Grundlagen und Methoden der Bewertung, Buchhaltung und Kalkulation in der Landwirtschaft, Berlin, 3rd ed., Paul Parey, 1928.

under Aereboe's leadership, would express itself in his words

"I am not against statistics and inductive reasoning, but only against round-about methods and incorrect application."²⁷

"One can hardly develop a controversy over the question as to whether a larger farm operation should or should not conduct a cash and credit account, labor book, wage book, manure register, feed records, milk records, fattening records, and similar reports. All such reports are indispensable and obvious things for the effective farmer. Questionable only is it whether in addition to the above records (physical data) he shall conduct other books and computations of his farm and of what nature these records are."²⁸

"Never can he succeed in conducting a farm account which will inform him directly how he shall organize and operate his farm."²⁹

This polemic, on the part of Aereboe, against the determination of production costs and enterprise earnings as a solution for farm management problems, is a preliminary to his insistence on the Budgeting (Kalkulation) in advance of every proposed measure of production. These calculations, are budgets whether made annually or for shorter periods of time. To Aereboe every management question whatsoever, can and should be solved in this manner.

The decision, as to which form of accounting is to be adopted, will depend in part upon the decision as to the type of data required. Where the Advanced Budgets are made up using the methods of Laur, it will be necessary to adopt a form of complete cost and enterprise earnings accounting. Where the proposals of Aereboe are accepted it will be necessary to have only a simple financial account plus physical records, as seeding, feeding, milk products, harvest labor, and similar data.

The data required for the Farm Budgeting calls for physical and price information. Under the first falls the technical production information, which relates to the physical effects of physical antecedent causes. These are the data of physical output and input such as the crop yields, livestock production, labor applications, feeding, seeding, etc. Under the head of price information fall the items of expense, both direct outlay and indirect expense, and the receipts, again direct and indirect.

²⁷ Heft, 167, D.L.G., Berlin, 1910.

²⁸ Aereboe, Fr. Allgemeine Landwirtschaftliche Betriebslehre, Berlin, Paul Parey, 1920, p. 654.

²⁹ Ibid. p. 657.

The question as to whether the price data to be used involve internal cost rates or merely data of probable outlays and probable receipts is significant from the point of view of theory as well as of practice.

There is a justification in the proposals of Aereboe for a simple financial accounting and the use of physical data taken from simple records. The process is a synthetic one. It uses data with which the farmer is familiar. It proceeds in a manner parallel to the farmer's thinking. Instead of attempting to set up hour or day rates for man labor, horse work, machinery or equipment use, etc., for a plant where these are already on hand and where no important alternative opportunity exists, the simple budget eliminates these entirely. It can justly do this since these items are equal in many of the alternative systems of farming open to the operator. Consideration in the Budget need be given only to value items coming to or leaving the farm. For the internal transactions physical data alone are considered. This, obviously, calls for accurate information as to the effect of each physical change upon both the incoming and outgoing values and then upon the net return. The added advantage of such advance estimate Budgets, is that when changes in but one phase of the productive activity are involved, other features remaining constant, then only that phase need be computed. The Farm Budget offers an effective means of testing the possible farm plan for its probable earnings and as Stieger says, "makes the farm management dynamic." To Aereboe the accounting would be maintained only insofar as it could render information for the Budgets. To him, this calculation in advance of operation, is the primary objective, the accounting secondary and a means to an end, not an end in itself. Laur, on the other hand, calls for a "most complete connection of the accounts and the budgeting. (Kalkulation)"³⁰

The question might be raised as to the possibility of gaining from the accounting all the information necessary for the Budget. Can the farm accounting furnish the physical facts required for the various possible combinations of enter-

³⁰ Lauer, E. Grundlagen und Methoden der Bewertung, Buchhaltung und Kalkulation in der Landwirtschaft. Berlin, Paul Parey, 3rd edition, 1928.

prises? Can it furnish the facts for possible changes within the enterprise? In many instances the question must be answered in the negative. But a series of records on the local physical production coupled with the technical knowledge of local production possessed by the operator should be of considerable aid in making the decisions for adjusting the physical combinations in the Farm Budget.

Insofar as price information is involved, covering the probable receipts for goods to be sold and the expected outlays for items of expense, accounting records give only partial aid. The products of our farms, though at times affected primarily by local conditions are today so subject to wider market influences that the limited data in the farm accounts will usually not suffice for all the demands made upon them.

If decisions as to the probable future prices are to be of assistance they must take into account price trends, price cycles, and conditions likely to influence prices during the period under consideration. Here the facts involved are for the most part external to the farm and the advance estimates or budgets are likely to lead to faulty conclusions unless these external factors are also considered.

German Farm Budgets are a product of the Farm Management attention given to the large estates of Germany. These larger farms³¹ generally have some form of farm accounting. They are usually in the hands of aggressive owners and have been operated for the most part by technically trained supervisors. The Farm Budget is accepted in such farm operation as a part of the routine, technical processes. The principles of Farm Budgeting and the process involved are, however, equally applicable to the smaller family farm. This field is now receiving attention at the hands of German Farm Management workers.

³¹ Of the total number of farms reported, 5,069,597, in 1907, there were 19,024 farms over 100 hectares, or 247 acres, in size.

AMERICAN FARMERS AND EUROPEAN PEASANTRY

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A discussion of farmer and peasant may well begin with a few linguistic details in order to clear away the troubles involved by the differences between English and German terminology. With the word "farmer" there are no difficulties. It has a plain German equivalent in "Landwirt," which means anybody who runs a farm no matter on what scale or what his legal status. "Peasant" is a more complicated term. It has had a history of its own and evidently, although its original meaning might have been the same as that of the German word "Bauer," the two expressions must have developed afterwards in different directions. The explanation of this fact lies in the different development of agrarian conditions in Germany and England. During the early 19th century the German peasant became a free man; the old English "peasant class" disappeared. The English word "peasant" still connotes serfdom, dependence, and the corresponding moral and social qualities; whereas the German word "Bauer" applies, more and more, to an individual who is proud of his occupation and is conscious of his class. So much improved has the status of that class become, that there is a growing tendency to confuse the word "Bauer" with "Landwirt" in general usage. That means that according to common German usage "farmer" and "peasant" tend to become linguistic equivalents. For scientific purposes, however, maintenance of a clear distinction between "Bauer" and "Landwirt," and I do not hesitate to add, between "farmer" and "peasant" is very desirable, as I explained in a former article.¹ With German conditions in mind I suggested the following definition for "Bauernwirtschaft": an agricultural management unit which is so limited as to area and capital investment, that it sufficiently supports the owner and his family only in case of self-man-

¹ "Sind Bauernbetriebe kapitalistische Unternehmungen?" *Landwirtsch. Jahrbuch für Bayern* v. 17 (1927), p. 164-173; abstracted in *JOURNAL OF FARM ECON.* v. 9, No. 4 (Oct., 1927), pp. 463-466.

agement and continuous bodily collaboration, but which, on the other hand, is not so large that the farming business, in case of eventual extra earnings, loses its character as the main occupation of the owner-family. There is hardly a good reason for not accepting a similar definition for the English word "peasant." Is it a loss to do away with certain vague and sentimental meanings which long ago lost their actual foundation and to replace them with a clear and logical definition? If this is accepted, should English-speaking people hesitate any longer to use "peasant" as an international term with a meaning virtually equivalent to "owner-operator of a family-sized farm"? Certain American propagandists, it is true, would lose an effective battlecry, but the economist would gain an expression which would prove useful in precisely and concisely defining an economic and social category which actually exists without as yet an exact and clear designation. It must be admitted that the need for a clear distinction between the small-scale family farmer and the large-scale capitalistic farmer-entrepreneur is less urgent in the United States than for example, in Germany. The family farm so far predominates in the United States, that everybody who uses the general term "farmer" thinks almost automatically of the *operator of a family farm*. Therefore we come to the conclusion that the common meaning of the word "farmer" has, at least theoretically, a close relationship with the term "peasant" viewed in European light.

But while we admit the theoretical identity of "farmer" and "peasant," how about conditions in practical life? Are the differences which doubtless exist fundamental or occasional in character? Is the mentality of the American farmer, and, therefore, his economic behavior, something really unique—something entirely different from that of the European peasant, or is his state of mind merely the product, or the effect, of outside conditions which have exercised an influence upon it? In order to answer these questions it seems useful to take a few glimpses of European peasant conditions.

In comparison with America, where the farm population seems rather uniform, European country population presents a picture of much variety and many contrasts. Even

when we disregard entirely the class of large-estate owners, large-scale tenants, estate managers, etc., the peasant class itself is not at all a homogenous unit. In order to find striking contrasts in social habits and economic attitude it is by no means necessary to make comparisons between the peasantry of different countries. In Southern and Western Germany for instance conditions vary so much that often a distance of a few miles brings the traveler to a region where not only another type of farming prevails but where also an entirely different sort of economic and social attitude on the part of the farm population exists. It goes without saying that the geographical characteristics of the region, such as climate and soil, the marketing conditions, size of holdings, racial characteristics, local historical development, and other tangible and intangible factors, are responsible for the various shades in the economic life of the peasantry. To make these statements a little clearer I cite the findings of a survey of the conditions of the peasant women in the Rhine Province.² No doubt, the attitude of the farmer towards his wife is a good indicator of the social and economic standing of the region investigated. The results of this study may be summarized as follows.

In a district scarcely larger than New Jersey, five distinct types of peasant woman have been found in different localities. In the mountain regions on both sides of the Middle Rhine, where rough climate and poor soils prevail and farms as a result of inheritance customs are very small and split up into numberless parcels, the peasant woman does the same kind of work as the man: she threshes with the flail (at least in some remote villages); she harrows with cows or horses, uses the fork, works in the forest, and even ploughs; and besides all that she has to keep house and attend to the children. Under these circumstances it is not surprising that a summer working day of fourteen, fifteen, and even more hours results. In the next region grape-raising for producing "Rheinwein" is the dominant feature. The "Bäuerin" works in the vineyards, but she does not share all the hard work of the husband; she specializes in work which requires a "light hand" and special ability. In

² Rheindorf, Margarete. Die Rheinische Bäuerin. (Berichte über Landwirtschaft, n.s. V.5, no. 4, p. 630-657).

the vegetable-growing regions of the foothills the interesting feature is that the woman plays not only an important rôle in the productive part of the business, but is also in charge of the actual marketing of the produce. There more than elsewhere she has equal rights with her husband and is a "self-conscious fellow entrepreneur." The next district is in the immediate neighborhood of the densely populated industrial centers of the "Ruhrgebiet," where the farming business is well equipped with all modern improvements; with machinery of all sorts; with electrical power. Here agricultural production is put on a purely commercial basis, so that it would be very hard to say in what respect these peasant farms differ from average American farms. The farm woman's position in this part of the Rhine Province, is quite different from that in other regions referred to above. Physical field labor on the part of the farm woman even in harvest time is unknown, but she is charged with the management of the stable, especially of the dairy barn. There she does all the kinds of work required, including milking and cleaning out. In the lower regions on the Dutch border, where permanent pasture and animal husbandry are the outstanding agricultural characteristics, the holdings are larger. There the physical labor of the farm woman is still further reduced, but with the increase of hired help the administrative responsibility and the mental activity of the housewife becomes a very important factor in the farm business. It is not only the duty of the peasant woman in that region to lay out careful plans for the work of the household, but she is also supposed to look after the dairy herd, the hogs, and the poultry, as well as the granary, the cellar, and the kitchen-garden. If any marked difference between these Rhine-country peasant farms and American family farms can be noted, it is in the greater variety of tasks which have to be performed by the farm woman in Germany. Although these tasks might differ in various parts of Germany, general observation points to a stronger position and a more important rôle of the woman on the German farm than on the American farm.

How about other details which characterize the modern farmer? Almost every textbook on agricultural economics explains the distinction between the old self-sufficing farmer

and the modern farmer who is a real entrepreneur with a purely commercialized business. For educational purposes there is a most useful sharp distinction between these two types of management. But observation of actual conditions shows that the extreme types on either side are far less numerous than one might suppose. The larger proportion of farms, even in the United States, has still a marked tendency toward use of home-produced commodities, and in Europe even the most primitive "back-woods" farms cannot exist unless they are connected, at least to some slight extent, with the world-wide system of capitalistic economy. In Europe there are regions where peasant agriculture is just as much commercialized as is the farming business in the United States. Denmark is only one example; there are regions in almost every country of Europe where the economic development has favored a close attachment of agriculture to other industries through commercial exchange of products. Variations in the type of organization of commerce in agricultural products do not affect the truth of this statement. In other regions the same sort of development did not make such rapid progress, and the percentage of products entering commerce is necessarily lower than in the regions referred to. Therefore one might speak of the differences as differences of degree rather than of principle.

Another characteristic feature of capitalistic farming is the intensive use of machinery and mechanical appliances, whereas the typical peasant works with primitive hand tools and plows. But this type of peasantry is gradually disappearing. Although the rate of increase in use of farm machinery can not be compared with the usual rapidity of American development of all sorts, it is nevertheless remarkable, as figures for Bavaria³ show: (Table 1.)

TABLE 1. NUMBER OF FARMS OF DESIGNATED SIZES USING SEEDING MACHINES AND THRESHING MACHINES, BAVARIA, 1895-1907-1925.

Year	Farms employing seeding machines			Farms employing power-driven threshers		
	4.9-12.4 acres	12.5-49.4 acres	49.5-247.1 acres	4.9-12.4 acres	12.5-49.4 acres	49.5-247.1 acres
1895.....	575	1,899	2,674	9,860	31,028	9,769
1907.....	1,239	10,182	10,578	27,031	69,104	15,661
1925.....	5,924	61,380	24,459	33,656	106,151	23,831

³ Die Landwirtschaft in Bayern (Beiträge zur Statistik Bayerns H. 113.) München, 1927.

It might be surprising that the mechanization of small-scale agriculture in Europe is so much behind that in American agriculture. But it would be wrong to explain this fact by charging the farming population of Europe with too great conservatism. The economic behavior of the European peasant, who hesitated a long time before introducing farm machinery to a considerable extent, was just as sound economically as the anxiety with which very early the American farmer seized every opportunity to familiarize himself with all kinds of machinery. And though even to-day the difference between America and Europe in the use of mechanical help on the farm is rather important, it must be remembered that the rôle which machinery plays is quite different in a country where soil is abundant and labor scarce from that in another where agricultural land is limited and the numbers of farm people are relatively great. For the same reason scientific management of agricultural labor is something which in the United States is not spoken of, but is actually practiced, because there has always been a most urgent need of saving and economizing man-labor. In Germany, on the other hand, we boast of a newly invented science, called "*Landarbeitslehre*," which is introducing Taylorism to large-farming estates and is also attempting to influence peasant farms. And there is little doubt that the idea of a rationalized use of human labor will more and more be seized upon by the peasant class as long as wages and the standard of living tend to rise.

Some economists, especially the Russian representatives of the "peasant-farm theory," claim as a main feature of peasant management the absence of hired help. This absence is for them the best proof of the noncapitalistic character of peasant economy. This conception of peasantry might be very practicable for Russian conditions; for the rest of Europe, at least for Central Europe, it is hardly acceptable without destroying the common usage of the word "peasant." Besides, it must be said that the question whether or not hired labor is employed on a given group of farms has only limited importance in the light of private enterprises. The decision to pay, or not to pay, wages for outside labor falls into the same category as all other decisions concerning

operating expenses. In other words, hired help ranks together with fertilizers, seed, machinery, feed, and all other items of this kind as cost elements from outside applied to the process of production. It must be deemed as a rather artificial measure to pick out one of these items, namely the hired labor, and use its presence or absence as the criterion for the distinction between two economic categories which are supposed to be fundamentally in contrast. Therefore I deliberately omitted this point from the definition of peasant-management quoted above and concentrated the definition around the argument of the physical labor of the entrepreneur (and his family) which seems to constitute a much stronger basis of discrimination, because its presence involves economic deliberations which are altogether different from those which a manager, who does not work physically, has to make.

The economic deliberations of a self-working farm-operator have the following characteristic features. They can never be brought to a straight money basis. The psychology of fatigue and the continuous process of balancing physical effort and economic result are the dominating factors. Cash rates of wages do not exercise any direct influence on the economic attitude of a worker-operator. This is the main justification for the establishment of a distinct economic category of this character. It may be said that labor remains labor no matter who performs it, and from the point of view of farm organization and management this is quite true. But if we go deeper into the psychological foundations underlying economic behavior, we must recognize that the use of one's own labor obeys decidedly other economic laws than the use of labor bought on the market. Here there is a remainder of precapitalistic, self-sufficient economy, which is easily overlooked in our commercialized economy, but which nevertheless actually exists and does not seem likely to die out for some time. Of course, a man's own labor is just as much a cost element as paid labor. But in the light of a private enterprise they play entirely different parts: the former is a cost element of a personal character put in by the subject of the economic enterprise and never to be expressed in terms of money values; the latter, as said above, is a regular

operating expense, introduced into the enterprise from outside, and always considered and felt as a money item.

Leaving the theoretical part of this question we have to ask what the actual differences are between American farmers and European peasants with regard to the use of hired labor. Unfortunately statistical data are scarce and not suited for direct comparison. For peasant managements in Bavaria we find the following distribution of workers: (Table 2.)

TABLE 2. NUMBER OF WORKERS PER 100 EMPLOYED ON BAVARIAN PEASANT FARMS OF SPECIFIED SIZE

Size of farm (Acres)	Owner-operator	Family help	Hired help
4.9- 12.4.....	30.5	61.8	7.7
12.4- 24.7.....	25.5	60.9	13.6
24.7- 49.4.....	19.6	53.9	26.5
49.4-123.5.....	13.6	40.4	46.0
123.5-247.1.....	6.1	14.3	79.6

Die Landwirtschaft in Bayern. Beiträge zur Statistik Bayerns. H. 113. München, 1927.

The bookkeeping records of the Swiss "Bauernsekretariat" at Brugg show similar distribution. (Table 3.)

TABLE 3. DISTRIBUTION OF VALUE OF LABOR ON SWISS PEASANT FARMS OF SPECIFIED SIZE

Size of Farm (Acres)	Value of farm labor (francs per hectare)			Percentage contributed by	
	Total	Owner and his family	Hired help	Owner and his family	Hired help
7.4-12.4.....	641	564	77	88	12
12.4-24.7.....	478	382	96	80	20
24.7-37.1.....	385	271	114	71	29
37.1-74.1.....	328	169	159	52	48
74.1 and more.....	265	100	165	38	62

Untersuchungen betr. die Rentabilität der schweizerischen Landwirtschaft im Jahre 1926/27
Landwirtschaftliches Jahrbuch der Schweiz, v. 42 (1928), p. 200-201.

Figures for selected groups of farms in the United States show much the same relationship. (Tables 4 and 5.)

TABLE 4. DISTRIBUTION OF LABOR COSTS ON CERTAIN FARMS IN ILLINOIS

County	Average size of farm	Operator's labor	Unpaid family labor	Hired labor	Operator's labor	Unpaid family labor	Labor Hired
	Acres	Dollars	Dollars	Dollars	Per cent	Per cent	Per cent
Clinton	164.0	494	355	156	49.2	35.3	15.5
Monroe }							
Randolph }	175.0	544	363	135	52.2	34.8	13.0
Woodford }	208.1	580	199	433	47.9	16.4	35.7
Macon, Logan, }							
Tazewell, }	232.5	551	208	490	44.1	16.7	39.2
Mc Lean }							
La Salle }	247.3	604	261	599	41.3	17.8	40.9

Illinois Agr. Exp. Station. 38th Annual Report, 1925, p. 106-109.

TABLE 5. DISTRIBUTION OF LABOR (HOURS OF WORK PERFORMED) ON FARMS OF SPECIFIED TYPE IN WISCONSIN, ILLINOIS AND OHIO

State and type of farm	Proprietor's labor	Family labor	Hired labor
	Per cent	Per cent	Per cent
Wisconsin: Dairy farms.....	33.0	11.5	55.5
Illinois: Corn farms.....	41.9	0.1	58.0
Ohio: Livestock farms.....	40.8	12.7	46.5
Ohio: Crop farms.....	50.1	1.4	48.5

U. S. Dept. of Agr., Yearbook, 1922, p. 1074

All these examples indicate that the proportion between hired labor and the labor of the farmer and his family is almost the same in the United States and in typical peasant sections of Central Europe. The big difference lies in the assistance which the farmer gets from the members of his own family. As pointed out above, the participation of the farmer's wife in physical field labor is a very important factor in peasant farming all over Europe. In the United States the farm woman's effort is more or less confined to household tasks. The reasons for this difference are numerous. Density of population, size of family, historical and economic development, differences in social psychology, natural conditions all may be considered as influencing factors. Among them the social attitude toward the women must probably be regarded as the most important influence. These differences in social psychology are well illustrated by the following statement of F. Beckmann:⁴ "We Germans stand on the bridge between the Slavonic and the Anglo-Saxon world; the Slavonic nations, where the woman is considered as laborer and the Anglo-Saxon nations where she emancipated herself from economic fetters, even from farming, and developed entirely different ideals of humanity." But all these differences are hardly important enough to constitute an essential contrast in economic principles.

Nothing has been said so far about the differences in the standard of living between America and Europe, which are almost proverbial. It would be useless to deny these differences. But it must be remembered that many of the indications of a high standard, which characterize the American farmer, are perhaps less an outgrowth of higher social pretensions than an effect of economic necessity. A striking

⁴ Entwicklungstendenzen in den betriebswirtschaftlichen Aufgaben der Landfrau. Mitteil. der Deutschen Landw. Gesellschaft v. 43, p. 210-213 (1928).

feature is the frequency of the automobile and the telephone on American farms. This can not be regarded as a sign of luxury, because the large distances, the scattered settlements, and the resulting isolation of the single farm cause an urgent need for rapid means of communication. In European countries with heavily populated rural districts, with prevailing village settlement, and with a dense system of local railroads, the case is different. Here the purchase of an automobile on the part of a small farmer would be considered and actually would be, an economically unsound outlay. Therefore it is somewhat dangerous to compare standards of living without examining at the same time variations in economic and natural conditions. Besides it must be stated again that European rural life varies so greatly from one region to another, even within short distances, that it seems impossible to speak of *one* European or even of *one* German standard of rural living. Also in the United States there exist considerable differences between highly developed areas and "backwoods" regions. Altogether, it seems doubtful whether the great emphasis generally placed on the differences in the standard of living is actually justified, especially since the term "standard of living" has by no means an internationally recognized meaning and does not lend itself readily to exact comparisons on a quantitative basis.

In summarizing our conclusions we might say that intrinsic and essential differences between an American family farm and a European peasant farm do not exist. The American farm has no economic features of its own which cannot be found somewhere in Europe and wherever differences exist they do not represent implacable contrasts, but can be explained as gradations or varieties of the same economic category. The characteristic feature of this category is the physical labor performed by the owner of the business, and all other characteristics and qualities which can be attributed to it besides are only secondary in character.

NOTES

THE MAKING OF AGRICULTURAL POLICY

We have had many attempts in the past eight years to formulate programs and policies for agriculture. All sorts of groups and combinations of persons and interests have come together and conceived and given birth to a report of some kind after much travail, until one is finally moved to ask the general question whether it is possible to call together a group of persons representing diverse interests and expect them to bring forth a set of conclusions which are clear-cut and positive, and at the same time valid. One would probably have been answered in the negative, until there appeared last summer the report of the Joint Committee on the Bases of Sound Land Policy.¹

The Joint Committee which directed the preparation of this report had for its Chairman Mr. Frederic A. Delano, President of the American Civic Association, for its Secretary Miss Harlean James, Executive Secretary of the American Civic Association and Federated Societies on Planning and Parks, and for its Economic Advisor, Dr. George M. Peterson. The points of view of agriculture were represented by Dr. L. C. Gray; of forestry, by Mr. Ovid M. Butler of the American Forestry Association and Mr. L. F. Kniepp of the U. S. Forest Service; of the Department of the Interior, by Horace M. Albright, Director of the National Park Service and Dr. Elwood Mead, U. S. Commissioner of Reclamation; of cities, by Dr. John M. Gries, then Chief of the Division of Building and Housing, U. S. Department of Commerce, by John H. Ihlder, of the Chamber of Commerce of the United States, and by Mr. Frederic Law Olmsted of the National Conference on City Planning. The recreational and park point of view was further represented by Dr. Vernon Kellogg of the National Parks Association, Dr. John C. Merriam of the National Conference on Outdoor Recreation, and Dr. Wilbur Nelson of the National Conference on State Parks. The other member of the Committee was Dr. George S. Wehrwein. The funds were provided mostly by the Laura Spelman Rockefeller Memorial and the Russell Sage Foundation.

Most reports prepared by so large and so miscellaneous a group as this are full of compromised half-truths and evasive statements. But not this one, as witness the following: "It would therefore seem prudent, if public funds are to be expended to reclaim lands by drainage or irrigation, that they should be authorized *only* after careful studies have been made to show economic and social justification for specific lands in specific crops and probable effect on local and total production of proposed crops." "... it appears unnecessary to direct effort toward bringing more land into use, at least not for ten or fifteen years, because it will take the population about that long to catch up with past changes." We are told that the present land in crops in the United States plus the 40,000,000 acres now reclaimed but still unused, plus eventually 35,000,000 more, will take care of all the population we are likely to have.

The pronouncement on the subject of forests may be summed up by saying that the prices of stumpage have risen no faster than prices of farm products,

¹ *What about the year 2000?*, reviewed elsewhere in this issue.

that these prices do not justify more intensive forestry at present, and that when lumber prices do start upward, as they will some decades hence, consumption will decline and production improve, and in time a somewhat higher price level will be reached that represents the cost only of producing timber by rather extensive methods on the large expanse of land that will not be used for agricultural products. We need have no fear of an ultimate lumber shortage; only of a period when prices are temporarily too high because of a lag in adopting the somewhat improved systems of forest culture and methods of timber utilization that will be required. The assumption that this so-called "idle" land should be reforested is vigorously assailed. We do not have the facts on which to base a sound forest policy. Extreme statements about timber scarcity may prove to be good propaganda to arouse interest in the problem; but a national forestry policy should be more securely based.

The report gives more space to parks and recreational uses of land than usual in such discussions. One would expect this from the personnel of the Committee. But the departure is very welcome, and timely. The uses of much of our present land on direct consumption are coming to mean more, even to people in moderate circumstances, than what the additional farm and timber product they replace could buy in prevailing markets.

No one wishes to dispute with this Committee the importance of forethought and conscious effort at planning and control of land use. But probably many of the problems involved are more difficult of answer than the report would suggest. In the chapter on "Urban Uses of Land" especially, there is constant reference to ratios that need to be determined between different classes of use, between population and open space, between street space and total area, etc. In another place (p. 12) the report speaks of "defining a *guage* which could be applied by public officials and private individuals to aid in determining the best use of specific areas of non-urban land." Indeed it is possible to devise such ratios and *guages*. But most of them will have little scientific basis. Even to determine how much other costs are raised, or to measure what else is sacrificed, when streets are widened, or building lines are set back, or a tract is set aside for forests, is ordinarily next to impossible. No formula will ever express the marginal utility of different uses of a given piece of land to a given population group. Neither can any definite guide be set up for selecting national or state parks. "Quality" or "distinction" in scenery is a matter of degree and individual judgment. At the best, some ratio or measure is chosen which seems to have produced conditions that to the officials concerned seem desirable elsewhere, and the next generation of taxpayers pays the bills. Comparable ratios for different cities or areas, however, will be very useful as guides in such decisions. In all such matters, the informed judgment of intelligent public-spirited persons is the safest guide—not ratios or formulæ.

The proposal is made to set up a national land planning commission to follow up the work of the Joint Committee, this to be composed of "experts (specialists), who have nothing to gain by advocating one solution or another, and representatives of the industries who have practical knowledge." If this is to be interpreted to mean a commission of the latter sort "employing" the experts, as in the case of the National Industrial Conference Board, the

reviewer must protest. If it means that the commission itself is to be composed of somewhere nearly equal numbers of representatives of the industries affected and of students of the problems involved, some of the latter being public-minded leaders of national thought, a competent staff of assistants being assumed, then such a Commission could render a great service.

The foregoing gives some sort of a notion of the scope of the report. It does not adequately suggest its prevailing high quality, the accuracy of its information, the soundness of its economic analysis, and its excellent balance and completeness. It should constitute the text for the topic of land utilization in university courses, and the handbook for all public servants concerned with its problems.

It is of interest to speculate why this report is so superior to that of the National Industrial Conference Board on the agricultural situation. Some of the reasons are probably as follows: (1) The subject covered was much narrower in scope. (2) More time was taken to digest the subject before the report was published. (3) The material which Dr. Peterson drew upon was in better shape for such use. All of the years of work of Dr. O. E. Baker went into the report and also the studies of population of Dr. Pearl and others. (4) The economic advice was of a high order. Dr. Peterson was ably assisted by Dr. Gray and others in the Government service. Being a trained agricultural economist, he knew the field and its data. (5) The Committee itself was made up largely of persons who were specialists in various aspects of the problem. Miss James' familiarity with the problems of parks and cities contributed greatly to Chapters III and IV. (6) The method of making the report was better conceived. Following the original planning, a tentative draft was prepared. This was read and criticized by the whole Committee. Then followed a long period of threshing out differences of opinion and coming to a common understanding, as a result of which no doubt many persons concerned have a clearer understanding of the problems in their own fields. The Industrial Conference Board report drew in but a limited way upon the resources available for such a study.

Some minor points in the report which one may question are whether agriculture has not more than kept pace with the population even in China and India (p. 97), as to whether the part of land values in the United States which is based on anticipated increase in income has wholly disappeared (p. 99), and as to whether the probabilities as to gains in efficiency in agriculture have not been overstated (pp. 110-118). One regrets that the table showing average farm earnings was not qualified still more (p. 133), and that the proposal of the Department of the Interior to establish model colonies in the South was not restricted more clearly to developing successful farming systems on land now in farms. There seems little place for "land reclamation" in such a program.

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THE SMALL HOLDINGS PROBLEM IN EUROPE

No problem in European agriculture is fraught with more interest just now than that of the social economy of small holdings. Several of the Governments—England, Denmark, Czechoslovakia, and Roumania among others—

are aiding in the creating of such holdings. Everywhere it is reported that the number of applicants for such holdings, if they are on good land, exceeds the supply available. Some of them, as in Denmark, are on land so poor that only the new methods of heathland cultivation make them farmable at all. The first reaction of a visitor from the United States is likely to be that such a movement is absolutely in the wrong direction, that Europeans should be encouraged to farm more land and not less. But the problem cannot be resolved so simply.

First, let us obtain a clear notion as to the nature of a small holding. Under the regulations in England, a small holding created by law may range up to 50 acres in size. But most of them are considerably smaller than this, especially in the fruit and vegetable sections, where the small holdings are most numerous. On the Continent, the bulk of them are nearer 10 or 20 acres than 40 or 50 acres. In England and Denmark, each holding is a solid tract; in most other countries it is laid out in a number of long narrow strips, the farmstead being in a nearby village, ordinarily less than two or three miles away. The work is all done by hand except for the aid usually of two horses in England and Denmark, or a team of cows or oxen, or a cow and a horse, elsewhere in Europe. On the small holdings in England, the crops grown are frequently of the sort that require hand labor—vegetables, fruit, poultry, etc. On the Continent, the crops are more commonly the regular field crops of the region. The grain on most small holdings on the Continent is harvested with a cradle.

The essential feature of the small holding economy is therefore a family supporting itself by hand labor for the most part and depending upon the holding directly for a considerable part of its food. On the majority of the holdings on the Continent, the hours are long between leaving home in the morning and returning at night, whenever there is work to do in the fields—and the whole family helps.

The great majority of the small holdings in most countries are of long standing. They came into existence in many different ways. In Denmark and Germany, the Government took an active hand in establishing them. The Government in England has been active in this direction only in the present century. All told, about 35,000 such holdings have been created in England. Yet the census figures show no increase in the number of small farms. What they would have shown without Government aid to small holdings can readily be conjectured. In England, Mr. C. E. Thomas, now stationed at the University of Reading, has studied the economy of the small holdings more closely than anybody else. Although not accepting the method as valid, for the sake of argument he added to the cash receipts the values at farm prices of the goods obtained from the farm, subtracted interest on the investments, and found that the remainders averaged less than the small holders and their families could have earned working as laborers for others. Thomas is of the opinion that the satisfaction of owning a home, working for oneself, having the family all at home, growing one's own provisions, and accumulating a little property, may easily offset the loss in money income. The advantage to society and the nation of home ownership and of a more stable citizenship must also be thrown into the balance.

On the other side of the question is the Honorable George M. Dallas, a mem-

ber of Parliament from Scotland, representing the point of view of organized labor, who says that these families would be better off as farm laborers, working as they do, only fifty hours per week, and having time for leisure, recreation and self-improvement.

The right answer to the question obviously involves considering all the alternatives. Let us take Denmark's case as an example. The average Danish farmer uses machinery, has a good deal of livestock, and has a gross and net income that would not be scoffed at in the Corn Belt. But what is to become of the new generations of farmers' sons? Present farms and Denmark's city industries and commerce can absorb only a part of them. The rest must emigrate, or become hired laborers, or owners of small holdings, or the present farms must be divided. A number of thousand do emigrate each year, although the Government would like to keep them all at home. Splitting of farms is seldom resorted to—the present farm is usually considered as small as is economical. There are not very many large estates still to be divided into small holdings. The earlier movement came at a time when many tracts of common pasture, meadow and woodlot were left over after the consolidation of the strips. These are no more. Consequently the small holdings are being pushed further out over the sandy heath lands which the Danes have learned to farm with some success.

The small holders in Denmark who were already well established before the World War are prospering, small-holder fashion. The writer visited one holding of 26 acres occupied by a farmer who was milking 15 cows and had fattened a hundred hogs during the year. He had helped establish a family of five children on holdings of their own. His soil was highly fertile and his crops were immense—wheat (for feed), barley and oats mixed, clover and oats and peas for stall feeding, and swedes and potatoes. But most of the small-holders established during and since the War are having a hard time to make their payments. The buildings and land cost too much money then and the prices of farm products are too low now.

It is clear that if the small-holding movement in Denmark were pushed vigorously, and first the larger farms and then the middle-sized ones were broken up as fast they were wanted, Denmark would eventually be a nation of small-holders—"peasants" in the American vernacular. The Denmark which we now know, of large, comfortable homes, would be no more! But Denmark would have more farmers, a larger farm population, and fewer farm laborers. Most of us would bid Denmark shrink from such a development. Needless to say, Denmark need not be warned against such an extreme development. Nevertheless, a considerable measure of it is apparently not deemed objectionable by the ruling opinion. Outsiders might feel that fewer small holders and more Danes abroad would be a better policy. After all, probably the issue is really one of the proper proportion of small holders in a nation.

In England a vigorous small-holding development would have the same effect as far as agriculture is concerned. The gentleman-farmer, characteristic of English agriculture, who employs from 3 or 4 to a score or more of laborers on a sizeable tract of land, would disappear. But among the ranks of the large class of farm laborers are many who would do better working for themselves upon a small holding. However, the movement is not progressing rapidly

at present. By the time that substantial brick or stone farm buildings, which the English insist upon, have been erected, the capitalization of the enterprise is so high that the purchaser has a difficult task set out for him. The ratio of building values to land values is very high on such holdings.

Wales and Scotland are already regions of family farms, like the United States, for the most part somewhat larger than small holdings proper.

The small-holding movement in Czechoslovakia, Roumania, and some of the other Balkan States is closely associated with the programs of nationalization in the new areas acquired by these States. In Czechoslovakia, for example, the estates which are being broken up are those owned by Hungarian and German noblemen and large farmers. The small holdings are being acquired for the most part by Czechs. The land is appraised at its value before the korun had depreciated, with the result that the owners receive a fifth or less of its real value. In addition, the new occupiers are given forty years in which to complete their payments. The former owners are ordinarily left with a tract of land no larger than the grounds and parks around the manor house. No wonder the demand for small holdings is very keen. In Roumania, the movement is directed against the large Hungarian landowners in Transylvania, the land being appraised as in Czechoslovakia. Hungary itself is engaged in promoting small holdings, but apparently more slowly, with little if any confiscation of values in it. Yugoslavia is no doubt making use of the program to assist its own nationals. It is clearly to be seen that the small-holdings movement in the Slavic countries is rapidly replacing farm laborers by small owners—"peasants" as we call them.

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SWISS STUDIES IN FARM ACCOUNTING

The purpose of this paper is briefly to describe the work of the Swiss Farmers' Secretariate¹ in farm accounting.

Mention was made in the handbook on research methods in agricultural economics² of Professor Laur's³ use of the case method in presenting his plan for analyzing the farm business. This is principally in connection with his teaching. A different farm⁴ was used in each of the three editions of his book on principles and methods of agricultural bookkeeping.

In regard to the usefulness of farm accounting and the inductive method, Professor Laur differs with Brinkmann's⁵ position that "Die Bedeutung der

¹ The Swiss Farmers' Union is a federation of all agricultural organizations in Switzerland. Its scientific body is the Swiss Farmers' Secretariate, which contains a division of agricultural accounting.

² Research Method and Procedure in Agricultural Economics, published by the Social Science Research Council, 1928, Vol. II, p. 309.

³ Ernst Laur, Professor in the Swiss Polytechnic University, Zurich, is Director of the Swiss Farmers' Secretariate, with offices at Brugg, Switzerland.

⁴ E. Laur, Grundlagen und Methoden der Bewertung, Buchhaltung und Kalkulation in der Landwirtschaft, Verlag von Paul Parey, Berlin. A small farm was used in the first edition, Neuohof in the second, published in 1922, and Sentenhof, one of the biggest farms in Switzerland, in the third edition.

⁵ Theo. Brinkmann, Kritische Betrachtungen und Beiträge zur Intensitätslehre. Fühlings landwirtschaftliche Zeitung, Verlag von Eugen Ulmer, Stuttgart, December 15, 1909, pp. 890. Professor Brinkmann is Director of the Farm Management Institute, Agricultural College, Bonn-Poppelsdorf, Germany. Professor F. Aereboe is Director of the Farm Management Institute, Agricultural College, Berlin.

Statistik liege hier nicht in erster Linie im Bereich der Induktion, sondern in dem Nachweise der deduktiv erschlossenen Zusammenhänge, in der Verifikation." Laur states that in the absence of statistical data, deductive analysis and personal experience must necessarily be relied upon. He recognizes the usefulness of Aereboe's methods in this respect,⁶ but believes that the fruitfulness of deduction increases when preceded with material supplied by inductive methods.⁷ He considers farm management advisory service most effective only when based upon farm accounting records. Inductive research contributes much to the scientific analysis of problems in farm management and agricultural economics when based upon such records.⁸

The concept of a farm business as an organic whole is generally accepted today by European teachers and research workers in this field. They disagree, however, regarding the possibility and merits of reducing that organic whole into separated enterprises for individual and independent cost and income analyses. This criterion is basic to Dr. Zörner's⁹ three-fold classification of farm accounting schools of thought in Europe, which he designates as (a) Howald's cost-of-production method, (b) Aereboe's calculation method, and (c) Laur's compromise method of the first two.

Professor Laur has been in charge of studies in farm accounts in Switzerland since their inception in 1898, when a joint farm accounting project between the Swiss department of agriculture and the Swiss Farmers' Secretariate was established. It was an experiment for the purpose of (a) determining the practicability of simple farm bookkeeping, and (b) preparing a monograph describing the agricultural situation in one community.¹⁰ The Swiss Congress, however, postponed its support for the preparation of the monograph.

Eight selected farmers were required to attend a short course in Brugg before they started keeping the set of books. So successful was this initial project during the first year in showing how much very valuable information could be obtained through a proper extension of farm accounting, that the Secretariate's recommendations as to it were accepted by the department of agriculture in 1900. These recommendations were as follows:

(a) From 20 to 40 farms be induced to keep simple farm accounts every year, the farmers to be paid for trouble incurred the first year.

(b) Farmers keeping accounts one year be invited at the close of that year to continue keeping them, and to turn over such results to the central office of the secretariate.

(c) Additional farms be included until a sufficient number of useful records were available for all common types of farming.

(d) The major results of such records be summarized and published annually.

⁶ Laur, *Die Betriebsberatung in der bauerlichen Wirtschaft, Arbeiten der Deutschen Landwirtschafts Gesellschaft*, Heft 167, 1910, p. 41.

⁷ *Ibid.*, p. 55.

⁸ Laur, *Untersuchungen über den Einfluss steigender Intensität auf den Reinertrag landwirtschaftlichen Betriebe*, a 33-page article, published in *Berichte über Landwirtschaft*, Berlin, 1927, Vol. 6, Nr. 4, p. 521.

⁹ Hans Zörner, *Untersuchungen über die Bedeutung von Kalkulationen und Produktionsrechnungen in der Landwirtschaft*, a 57-page article in *Berichte über Landwirtschaft*, Berlin, 1927, Vol. 6, Nr. 4, p. 559.

¹⁰ Fritz Zaugg, *Die Rentabilitätshebungen des schweizerischen Bauernsekretariates*, Brugg (Aargau), 1923, 40 pages.

Financial aid of 5,000 francs annually was promised by the federal government. This was increased to 15,000 francs by 1910, and to 40,000 francs by 1922, when a total cost of 65,445 francs was incurred. The first large short course was attended by 131 farmers in 1901. The early popularity and rapid expansion of this work made necessary the establishment of an agricultural accounting division in the Secretariate. Four hundred eighty-seven simple farm records and five double-entry records were supervised and summarized for the 1926-27 year.

The cost route and survey systems of gathering such data are unknown in Switzerland. Professor Laur's studies are based on records maintained the entire year by selected farmers after applications have been accepted by the central office. Those desiring to make a detailed analysis and critical study of his system should read his comprehensive volume on this subject.¹¹

Not all can be accommodated who seek participation in the annual three-day short course in Brugg, which admits them to the benefits of this farm accounting service. The desired number are selected by the Secretariate. These short courses are conducted in French and German every February. Available funds limit the attendance from 100 to 120. Preference is given to applicants from communities where accounts are needed most, but only after printed agreements between such applicants and those in charge have been signed. Members are reimbursed for transportation and living expenses incurred by the short course. In case a short course member does not fulfill his agreement, he must refund costs incurred to the Secretariate plus an additional tuition charge. The following figures indicate the percentage of those attending short courses who keep accounts one year or more:

85 to 90%	keep them	1 year or more
50%	keep them	2 years or more
33%	keep them	3 years or more
25%	keep them	4 years or more
20%	keep them	5 years or more
11%	keep them	10 years or more

An inspector visits every farmer once annually for the purpose of inspecting the records and answering questions. He may also review the inventory to see if correct valuations were entered. Wages are estimated for family labor. Building costs are allocated among agricultural, household, sideline and private uses. Finally, an exact description is written regarding the natural factors, soil quality, building arrangements, farming system, crop rotation, fields, market characteristics, intensity of cultivation labor conditions and so forth. This description is fundamental and *basic* to classifying data for later statistical analyses. One man performs all the work of inspection and describing farms. It is claimed that this is an effective way to add the uniformity and objectivity of records that research studies require. Books generally are closed late in February. The farmer's part of the contract ends when they are sent to the Secretariate.

¹¹ E. Laur, *Grundlagen und Methoden der Bewertung, Buchhaltung und Kalkulation in der Landwirtschaft*, published by Paul Parey, Berlin, 2nd edition, 1922, 600 pages, or the third edition.

The necessary office work to check, close, and draw up annual statements for the nearly 500 records requires a personnel of from 8 to 20 persons from 6 to 7 months (March through September). Summarization of important items and application of statistical analyses to income studies occupy the remainder of the year.

The results are published annually in two sections of about one hundred pages each in the agricultural yearbook of Switzerland. Special studies²² are also made relating to type of farming, size of farm, the intensity problem, agricultural prosperity, cost of production and social income. Professor Laur answers Zörner's attack on the usefulness of cost-of-production studies by insisting that agricultural economics could render no greater service to agriculture than actually to determine the true cost of production.²³

In conclusion, Swiss studies in farm accounts contribute to the following:

- (a) Determination of Swiss agricultural incomes and their changes under influences of natural and economic factors.
- (b) Solution of numerous farm management problems.
- (c) Supply statistical materials to farmers and agricultural schools for educational purposes.
- (d) Offer proof supporting demands for agricultural legislation.
- (e) Supply a dependable basis for land valuation, rental and inheritance purposes.

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THE DIVISION OF RENT BETWEEN LANDLORD AND TENANT IN CHINA

In the literature of economics, rent is usually defined as the value, or the price, of the use of those qualities of land that are not created by labor and capital, and which cannot be increased by human industry—in the words of Ricardo, *the original and indestructible powers of the soil*;¹ in the words of Marshall, *the annuity of sunlight, air and rain, and the space required for the life and action of vegetables and animals*.² Thus defined, it at once excludes payment for those qualities of land, such as the mechanical and chemical properties of the soil, that can be brought under man's control. And this is precisely what the Chinese farmer understands by economic rent, as is shown by the curious system of vesting the ownership of land-space in the landlord and that of soil-fertility in the tenant.

In parts of China where tenancy prevails in one form or another, the landlord is not the sole proprietor of the land, but the land is owned in part-

²² The following are examples of such research studies: (a) E. Laur, *Das volkswirtschaftliche Einkommen aus der Landwirtschaft*, published in *Thünen Archiv*, Verlag Gustav Fischer, Jena, 1909, Vol. II, pp. 228-253.

(b) E. Laur, *Untersuchungen über den Einfluss steigender Intensität auf den Reinertrag landwirtschaftlicher Betriebe*, published in *Berichte über Landwirtschaft*, Berlin, 1927, Vol. 6, Nr. 4, pp. 521-553. This study is summarized as following: "Der Rohertrag, das volkswirtschaftliche Einkommen und die Rente aus der Landwirtschaft steigen mit zunehmender Intensität. Es gilt dies für alle Betriebsgrößen und Bodennutzungssysteme mit Ausnahme der Alpbetriebe, ganz besonders aber für die Ackerbaubetriebe" (p. 549).

²³ E. Laur, *Die doppelte landwirtschaftliche Buchhaltung*, published in *Berichte über Landwirtschaft*, Berlin, 1928, Vol. 7, Nr. 2, p. 200.

¹ "Principles of Political Economy," Everyman's Library edition, p. 33.

² "Principles of Economics," 1922, p. 147.

nership by the landlord and the tenant. The landlord owns the so-called *tien-ti* (farm-bottom) or the space of the field, i. e. the land exclusive of the surface; while the tenant possesses what is known as *tien-mien* (farm-surface) or *fei-tu* (fertile soil) comprising the improvements made, or the labor spent, in developing the land into a cultivated farm. Traditionally, all farm lands are supposed to be barren; they are brought to life and fertility by gradual development and cultivation by the farmers. That is why the farmer is entitled to the surface of the farm. In other words, the fertility of the soil is the exclusive property of the tenant who cultivates it.

The market price of "farm-surface" or "fertile soil" is generally one-third to one-half of the price of the "farm-bottom," but sometimes the former may be higher than the latter. For instance, in Wuhu, Anhwei Province, the "farm-bottom" is worth only \$30.00 silver per *mow* ($\frac{1}{3}$ of an English acre), while the "farm-surface" sells for \$50.00 silver per *mow*.³ Thus the proportion of ownership is 5-8 to 3-8, meaning that the tenant possesses a greater share than the landlord in the total value of the land. This right over the fertility of the soil is so firmly established by custom that it is transferable from one tenant to another, or from tenant to landlord. Thus if a tenant B wants to cultivate the farm of a tenant A who, for one reason or another, wants to quit, he has to pay to the outgoing farmer the full price for the "farm-surface" before he can step into his shoes. Or, if a landlord wants to eject a tenant for some good reason, the two most justifiable reasons being frequent default of rent payment and despoliation of the land, he may deduct the unpaid rent from the value of the tenant's property rights to the "farm-surface," but must pay any balance due to the tenant in cash. Then the land will become the sole property of the landlord.

The value of the land being based upon the amount of rent—a principle which is also understood by most Chinese farmers, as is evidenced by the practice in many places of quoting land prices on the basis of the rent stipulated in the tenancy contract and in proportion as the actual rent of the land is more or less than the stipulated amount⁴—this system of vesting joint ownership of land in landlord and tenant has the effect of dividing the annual rental between the two in the proportion of each other's vested rights in the land. Thus the tenant, who has surface rights to the fertility of the soil, pays to the landlord only the true economic rent for the indestructible land-space, but keeps for himself the return on the "farm-surface," which is a result of his accumulated labor and capital investment.⁵ This division of rent between landlord and tenant is clearly seen in the practice of subletting farms. The tenant's rights to the "farm-surface," when not sold outright, will yield him an annual income if he chooses to sublet the land to a third party. One of the arrangements for subletting is for the tenant to sign a contract with a third party who pays the stipulated rent to him plus an additional amount

³ According to the investigation of the Bureau of Economic Information of the Ministry of Industry, Commerce and Labor. The *Chinese Economic Monthly*, vol. III, no. 2, Feb., 1926, p. 52.

⁴ The stipulated rent of the tenancy contract fixed in many cases as far back as 15 or 20 years ago is subject to decrease or increase according to crop conditions and grain prices.

⁵ Where the tenant has surface rights to the land, seeds and fertilizers are usually supplied by him.

known as *siao chu* (small rent), while he himself (the original tenant) is still responsible to the landlord for the rent as fixed in the contract. Moreover, the tenant may use his right of tenure as a mortgage for borrowing money. In that case, the mortgagee will cultivate the land and keep, as interest payment on his loan, all its produce, after having paid rent to the landlord. This surplus over the rent to the landlord and the wage to the cultivator which goes to pay interest on the loan is possible only because the tenant's share is considered greater than mere remuneration for his labor and current expenses. In other words, there is a return on the "farm-surface"—a payment for the tenant's past investment (e. g. fertilizers, etc.) and accumulated labor sunk into the land.

This Chinese system of dividing rent between the landlord, owner of land-space, and the tenant, owner of soil-fertility, is significant for economic theory in several respects. First, it illustrates clearly the nature of true economic rent. Second, in this scheme, a distinction is made between rent and quasi-rent (known to the Chinese farmer as *siao chu*, or small rent). By reserving the return on the fertility of the soil to the tenant and leaving the income derived from the land-space to the landlord, it serves as a beautiful example of Marshall's dictum that improvement on soil fertility is to be regarded as capital and its return as quasi-rent, while the income derived from heat, light, rain and air conditioned upon land-space is to be regarded as true economic rent. Third, it harmonizes with the best teachings of economics on rent, namely, that "space-relations" (Marshall) or "property of extension" (Commons) is the chief property of land which constitutes the basis of rent.*

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THE BERLIN MILK MARKETING SYSTEM

Recently a study has been published discussing the Berlin milk supply.⁴ This report is the outgrowth of an investigation undertaken by the "Studien-gesellschaft fuer die Milchversorgung Berlins," of which Professor Brandt, the newly appointed Director of the Institute of Marketing Research at the College of Agriculture, Berlin, is the Secretary.

There has been urgent need of disclosing the facts pertaining to the supply and distribution of milk in the city of Berlin, and for this purpose the Studien-gesellschaft, comprehending in its membership the leading agricultural groups and institutions, was organized.

"The population of Berlin has a right to, and a keen interest in, a public discussion and explanation of its milk supply problems," the author says in his preface.

The study deals, therefore, critically with the deficiencies in the Berlin milk marketing system. It analyses the present status and methods of production

* By concentrating attention on "space-relations," Marshall is emphasizing the scarcity aspect of rent, or as he says, he is going "straight to the fundamental relations of demand to the scarcity or abundance of the means for the production of those commodities for making which the agent is serviceable." For a discussion of "scarcity rents" and "differential rents," see *Principles*, 1922, p. 422; Henderson, H. D. *Supply and Demand*, p. 83-94.

⁴ "Der heutige Stand der Berliner Milchversorgung," by Dr. Karl Brandt. Berlin: Paul Parey, 1929. 184 p.

and supply, and the prevailing practices in milk transportation and distribution. Fluctuations in supply and demand, milk ordinances, quality of the supply, and the problems of adjustment and price are discussed.

The report is concluded with a programmatic statement on essential factors of reorganization.

The exposition is to some degree purely descriptive, going into great detail as to the various phases of the marketing system. This is probably the first time in German literature that the various methods and practices of marketing milk have been described as fully and as plainly.

There is to follow a second volume dealing with a definite outline for the reorganizations of the whole marketing system. This first study is based on the information supplied by 700 questionnaires, which were returned by dairies of the Berlin milk shed, on 109 questionnaires returned by milk plants, on the survey records of additional 128 milk plants, and on 300 questionnaires returned by consumers.

In total 2,000 questionnaires were sent to producers, 1,500 to consumers. In addition to the schedules obtained by the survey method, much material was secured through the Chamber of Agriculture of Berlin, the Agricultural Societies and the Milk Producers' Federations. Voluntary cooperation was secured from various additional institutions and organized bodies.

Four hundred samples of milk sold by various methods in the Berlin retail market were taken and analyzed to determine the quality actually offered for consumption. The structure and the extent of the milkshed was determined by an inquiry undertaken by the Federal Railway Company of all shipments of milk made at a certain date.

Berlin with its more than four million population is the central milk market for northeastern Germany. The tendencies and fluctuations in the Berlin market are determining factors for the situation of the whole eastern German dairy industry, since the producer of the northeast has very few large markets besides Berlin.

Berlin draws milk from more than 9 Provinces and States, and 13.6 per cent of the milk in 1927 was carried more than 200 kilometres (125 miles) to the market. The seasonal fluctuation of the total amount of milk produced in the major supplying districts reaches about 70 per cent of the average annual production, fluctuating about 40 per cent above and 30 per cent below normal. The quantity produced within city limits, however, is almost free from seasonal variation.

There is no satisfactory machinery to take care of the high seasonal surplus production, which runs up to 25 per cent of the total supply.

There is discontent among the consumers due to unsatisfactory quality, the lack of a trustworthy nomenclature and a standard grading system.

The dealers are worried just the same over the low standards of quality and the heavily fluctuating supply.

The complaints of the farmers are regarding the resulting unsatisfactory price. Professor Brandt gives a good discussion of the few facts known regarding the consumption of milk and milk products. Unquestionably the market demand could be greatly increased, particularly for bottled milk of good quality.

The per capita consumption of milk, at present 0.3 liter (0.53 pt.) per day, is rather low. The per capita consumption of cream also has great possibilities for further increase. The average production per cow per year in the Berlin milkshed is 2,250 liters (5,100 lbs.), which could be increased about 100 per cent by means of better feeding and dairy management. 75 per cent of the total supply is shipped in by railroad, 23 per cent is produced within city limits. The rate per cow for this city production is 4,400 liters per year.

Dr. Brandt reasons for a concentration of the Berlin milkshed to 75-100 kilometres; he criticizes the existing uneconomic extension of the supplying area, and he calls for further development of dairy farming in nearby sections, which are extremely well suited for intensive dairy farming.

The analysis of the survey of railroad shipments discloses the fact that the milksheds of the various consuming centers are overlapping to such an extent that greater adjustments to keep pace with the development of markets are needed. Dr. Brandt urges a systematic reorganization of the whole German milk market, to eliminate waste and maladjustments and to harmonize surplus and deficiency areas in the most economical way possible. The consumers' demand for milk of a higher quality standard is, according to Dr. Brandt, fully justified. There are vast possibilities of increased milk production within an extremely restricted area around Berlin. Milk of low quality shipped into Berlin from a long distance has resulted in great losses through deterioration of the milk before reaching the market.

According to conservative estimates on individual days up to 25 per cent of the total supply has been sour on arrival in the Berlin terminals.

The investigation of transportation facilities furthermore shows that of 300 freight cars carrying milk only 35 cars had refrigeration equipment, of which but 12 were actually iced, and this was done poorly and only during the peak of the summer. Tank cars are not in use and on the average the freight cars carrying milk are loaded only to about one-third of their loading capacity. Dr. Brandt criticizes severely these deficiencies, the lack of cleanliness and the slow, labored, and often careless way of handling milk by the transporting and unloading agencies.

Even criticisms are offered regarding some of the practices in use by public health officers while taking samples on arrival of shipments.

Since there are few prospects for a radical quality improvement on the production end, any concentration of the milkshed, which might tend to shorten the hauling distance of the total supply, seems to be desirable from an economic and a sanitary point of view as well; 59.6 per cent of the Berlin milk supply is being shipped in old wooden barrels. The report urges a radical and speedy elimination of these extremely unhygienic containers. The replacement of these barrels within one year would cost more than half a million marks and would amount to 0.53 per cent of the gross value of the annual milk supply.

The transportation is made still more complicated and costly since not even the largest Berlin milk plants have any rail connection. The total milk supply of the 4-million city has to be unloaded twice and carried by wagon from terminal to plant. The city milk ordinance regulating the Berlin milk trade is according to Dr. Brandt extremely out of date and insufficient. There are

no clear definitions as to standard grades and quality requirements, not to speak of bacteria count.

The increasing number of milk dealers selling milk in open containers does make the official control of quality still more difficult. In 1927 the number of dealers was increased by 700, or about 10 per cent.

The sanitary control of the 2,200 city dairy herds is still insufficient. The city health department has some sort of a sanitary control by taking samples of the bulk of the incoming milk. But there are 5 agencies with overlapping functions active in the health control of milk. This duplication and the lack of proper organization accounts for many of the deficiencies disclosed.

The best proof for the fact that the existing system of control is not far-reaching and not strict enough, is demonstrated by the extremely low quality standards of the milk when it reaches the final consumer. To remedy this situation first of all a radical change of production practices is needed to improve the quality on the farm, which cannot be done without an elaborate machinery for farmers' education and field inspection.

Several attempts have been made by the Chamber of Agriculture of Berlin to introduce a standard agreement for dealer and producer, which provides for differential payments for basic and surplus production in view of a regulated and stable supply.

These efforts were abolished because of the lack of understanding on the side of the farmers.

The present status of the market regulation is such that the dealers manufacture all the year around increasingly irregular quantities of surplus milk at high cost. This steady surplus has a very depressing effect on the market and pushes the price for the farmer to extremely low levels. The farmers of the Berlin milkshed do need, therefore, large-scale cooperative organizations, which could take care of all the problems of education, quality improvement and production control.

Professor Brandt, who is thoroughly familiar with the rural credit situation and the financial status of German farming, states that the majority of eastern German farms could be made profitable, if the farmers only would do their best in helping introduce a more satisfactory milk marketing system. The advocated reorganization would bring not only adequate returns to the producer, but also take care of the complaints of the dealer and satisfy the consumer as well.

As far as the data are available detailed comparisons are made of prices and margins. The returns to the farmer amount to about 50 per cent of the retail selling price. This price to the producer is fixed regularly by a price nominating commission of dealers and farmer representatives.

In consequence of the low bargaining power of the farmer the price is largely determined by the trade according to the flow of the surplus production. The trade always is assured of a fixed spread and the farmer has to carry the whole risk of the market fluctuations and in addition the steady burden of a buyers' market. The unhealthy status of these price negotiations is severely criticized by the author. He is of the opinion that appreciable savings could be gained by a thorough rationalization of the existing trade prac-

tices and operating methods in the city plants. The whole surplus should be taken care of in the dairy plants out in the country.

The so-far unknown method of payment on the basis of quality instead of volume would do more than anything else in educating the farmer to produce the best quality milk possible.

Professor Brandt has done well in bringing out these points clearly, stating his postulation for reform in a very definite and emphatic way.

The study on the whole demonstrates how much adjustment is needed in the German agricultural industry and how many essential marketing problems are still awaiting solution. Considering this, one must keep in mind always that Germany has lost far more than a decade in her steady economic development due to war, inflation, political disturbances and reparation obligations. All this has detracted the attention and the necessary funds from an inquiry into many vital phases of national economic life. Any investigation, therefore, which tends to disclose unhealthy conditions and existing deficiencies must be regarded as a definite step toward relief and adjustment. Viewed in this light the study of Dr. Brandt must be greatly appreciated.

In outside appearance the study is made up somewhat spectacularly as to size and print. The presentation of the text could have been more concise, also the 45 maps are not altogether free from criticisms according to the norms of statistical presentation. The original data are presented in great detail indeed, but little attempt has been made to extend the statistical analysis which might have brought out some more refined points to be gained from such a voluminous set of data.

These defects, however, which the study does have as a scientific treatise, are probably offset by the conspicuous effect it surely will have in this form on the general reader and the great attention it will receive therefore by the public. This way, no doubt, it will help focus still more the public eye on the problem involved and speed up the efforts toward a wholesome solution.

As to scope and method of approach, the study is classical in applying large-scale survey methods to an investigation of this kind.

The generosity and keen firmness demonstrated in the digging up and collection of basic data by a staff of people does make the study a standard approach, fit to supply facts for a suitable analysis of pressing rural marketing problems. No doubt, it will open a path and be a guide for further study and constructive criticism in this field.

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AMERICAN COMMISSION SURVEY IN GERMANY

The Commission was composed of the following: C. E. Gray, President of the Golden State Milk Products Co., San Francisco, Calif.; Dr. N. W. Hepburn, Director of the Peoria Creamery Company, Peoria, Ill.; J. Clyde Marquis, United States Department of Agriculture, Washington, D.C.; Dr. F. B. Morrison, Director of the Agricultural Experiment Station, Geneva, N.Y.; Dean H. W. Mumford, Professor of Animal Husbandry, University of Illinois, Urbana, Ill.; Dr. F. A. Pearson, Professor of Statistics, Cornell University, Ithaca, N.Y.; Dr. H. A. Ross, Professor of Marketing, Cornell University, Ithaca,

N.Y.; I. C. Weld, Director of the Chestnut Farms Dairy Co., Washington, D.C. Dr. Otto Rahn acted as interpreter.

This Commission was unique in that it was probably the first time in history that the leading agricultural organizations of an important agricultural country invited a group of scientific leaders from another country to make a study and and report on the status of agriculture. The Commission was the result of a desire on the part of leaders of German agriculture to learn the status of their agricultural development in comparison with that of the rest of the world after the disastrous experiences of the war and the subsequent period of financial distress. The entire cost of the project was defrayed by the German organizations, which included the chambers of agriculture and other organizations which represent German Agriculture semi-officially and privately.

The Commission was requested to give particular attention to the production and marketing of dairy products and meat. A free expression of opinion, criticisms, and comparisons with the methods followed in other countries, principally the United States, was requested. The report was somewhat broadened to include observations on a number of other subjects, such as land policy, standardization, cooperation, and research work, because of the relation of these to the development of the dairy and meat industries. The work was undertaken with the full realization of the difficulties involved when a group of foreigners attempt to make suggestions concerning an industry in any country. It was realized that some errors in conclusions might be made, but it was hoped that some of the recommendations based on established principles would be helpful.

The Commission met in Berlin, July, 1928 and listened to discussions on various phases of German agriculture by many specialists in various fields. Then it made a tour of the country, covering nearly 6,000 miles, to visit farms, milk plants, butter and cheese factories, storages, slaughter houses, etc. In each of the principal areas visited, information was given by representatives of the chambers of agriculture, professors, farmers, business men, and others. The leaders of German agriculture spared no pains to assist the Commission in its observations. After this survey trip, the group returned to Berlin and spent three weeks in studying its information and preparing the report.¹

The report reviews the agricultural situation in general and in Germany and presents some general comparisons between German and American farming.

One of the problems before the Commission was to properly evaluate the handicaps which beset the German farmer as the result of the period of depression. These include losses of livestock, deterioration in quality of livestock, shifts in production during the war to obtain a sufficient supply of food regardless of quality, and the changed marketing conditions of the nation. The report presents some of the more important problems in German agriculture as follows: 1. Improvement in the quality of city milk supplies and an increase in the consumption and production of milk; 2. Better control of animal diseases; 3. Improvement in the quality of fruits and fresh vegetables, standardization and improved methods of grading, packing and marketing, and in-

¹ Amerikanische Studien-kommission. Die Erzeugungs- und Absatzverhältnisse der deutschen Vieh- und Milchwirtschaft. Bericht einer Amerikanischen Studien-kommission, erstattet auf Veranlassung deutscher Landwirte, Industrieller und Banken. Berlin, P. Parey, 1929. 150 p.

creased consumption and production of these crops; 4. Improvement in the cleanliness and quality of eggs, standardization and improved methods of grading and marketing, and increased consumption and production of eggs; 5. A general movement for the standardization and grading of farm products, with payment to the farmer in accordance with quality produced; 6. A more efficient use of labor on farms; 7. Greater provision for agricultural research, for the prompt and widespread dissemination of the results of research, and for advanced specialized instruction.

Particular attention was given to the production and marketing of milk, and steps that might be taken to improve the quality of the milk supply. Progress in dairy science was slight during the war period, and it was found that the adoption of the latest improved methods would be necessary to bring about any material improvement in many of the practices of dairymen and milk distributors. It was recommended that attention be given to the improvement of pastures and to better systems of winter feeding, including the use of clover and alfalfa hays. The safety and quality of the milk should be improved, and this calls for effective legislation. New methods of handling milk on farms and in plants are needed. Changes in barns, in types of stalls, and in the sterilization of utensils, were pointed out as prerequisites to the production of a milk supply safe for drinking. A campaign for greater milk consumption is well under way in Germany, and the supplies in several cities are being steadily improved, but there are deep-seated prejudices to be overcome, such as the widespread idea that raw milk is unhealthful. The report contains a rather detailed chapter on factors involved in production and handling of the city milk supply, since this subject was of particular interest to a large number of the leaders in agriculture who feel that a well-developed dairy industry is one of the outstanding needs of the country.

There is some striking evidence that food habits of the German people are changing in that consumption of milk as a drink is increasing, and is being popularized by the establishment of milk-distributing agencies, to the extent that some opposition from the brewing interests is reported. The question of legal control as a means of securing a safe milk supply was given considerable attention by the Commission, and the report contains recommendations regarding ordinances and the organization for the regulation of milk inspection.

The meat industry of Germany consists of beef from cows discarded as unsuitable for dairy purposes, veal, and pork. Beef and veal production is largely a by-product of the dairy industry. Pork production is also closely related to the dairy industry, since dairy by-products form a large part of the feed supply of hogs. The quality of the livestock of Germany as a whole is good. The swine are excellent in comparison with the stock of leading swine countries. Sheep are less well-bred and are steadily declining in importance. Poultry appears to have been given less attention than would seem desirable in view of the large importance of eggs. The limit upon the production of animals is the feed supply, and it is therefore important to improve the productive capacity of the individual animal. Domestic production of meat moves quickly into the channels of retail distribution; so quickly in fact as to leave no reserve for temporary periods of shortage. These periods must be supplied by imports. There has been some agitation in Germany for the establishment of packing houses;

particularly for pork, but the rapidity with which the production is consumed as fresh pork leaves too small a supply to be used profitably by a packing industry.

The ten-year loss of progress in livestock feeding led the Commission to give considerable attention to this subject in the report, and the best methods of utilizing the available feeds in Germany are described in considerable detail. A well-organized national campaign for the control of livestock diseases was recommended, since it will obviously require a vigorous policy to safeguard health and protect farmers against losses. The continual presence of several diseases in the country and in neighboring countries, makes this problem an exceedingly difficult one.

The German market is supplied by products of great variety with respect to quality, and recognized national standards are needed. However, without the unifying force of a national government such as we have in the United States, it is difficult to secure the adoption of standards uniform in all markets of the many different provinces.

The Commission made a few recommendations regarding warehousing, cold storage, agricultural credit, and land policies. With respect to the latter, some system of remedying the serious situation resulting from dividing the land into small strips, is needed.

Upon the subject of agricultural education and research the Commission pointed out that, according to its observations, a more complete program of research and teaching is needed in Germany. It was observed that the general education of farmers seemed to be seriously handicapped by the absence of an organized extension service.

The general situation in Germany is best summarized in the report from which the following is translated:

Progress in the scientific development of agriculture has been proceeding at a steadily increasing rate during recent years. Great economic changes are taking place as science, new mechanical devices, and new practices are applied to agricultural production and marketing. This makes it necessary to reorganize and adapt old practices to meet new economic conditions. In the period since 1910, more changes have occurred in agricultural science and practices than ever before occurred in an equal length of time.

The changes which are occurring are so great that when this period is over it will doubtless be looked upon as period of agricultural revolution, comparable with the industrial revolution in the past century. Just at a time when the changes in agriculture were most rapid, the war checked progress in Germany.

For ten years the problem in Germany was to get food of any kind. Agricultural progress was checked by this condition. The generation of young persons whose experiences are limited to this period were deprived of an opportunity to become properly prepared to meet the present situation, in which consumers all over the world are demanding better quality than ever before.

In other words, Germany has experienced a handicap of about ten years which must be made up in order to bring her agriculture to a state to compare favorably with that of the United States.

Bureau of Agricultural Economics

J. Clyde Marquis

NEW BREAD GRAIN PROVISIONS IN SWITZERLAND

A rather intensive campaign waged by the agricultural interests of Switzerland (particularly the Swiss Farmers' Union) came to a successful termination on March 3, 1929 in the referendum vote which established as an integral part of the Swiss Federal Government a continuation of the Federal Grain Board or "Grain Monopol." The latter, established as a War measure, had continued pending the decision of the people. According to Dr. Oskar Howald¹ the Swiss Federation is empowered to:

1. Maintain the supplies of bread-grains necessary to meet the requirements of the nation.
2. Require millers to take over Federal stocks of grains and store same in order to facilitate exchange.
3. Advance the culture of bread-grains in the home-land.
4. Facilitate the growing and acquiring of high-value seed-grains.
5. Support self-sufficiency in the mountain regions through special measures. (reduction of foreign rates)
6. Take over millable home-grown grains at prices making grain-growing possible.
7. Require millers to take over said stocks of grain on the basis of market prices.

The campaign for this governmental subsidy of grain-growing was supported by the argument of self-sufficiency and protection in time of war, plus the possibility of diversity in farm organization needed as relief for the surplus production of milk and meat.

The agriculture of Switzerland is based primarily upon dairy products.² In addition fruit, wine, potatoes, some pork, eggs, poultry, and honey add income for the farmer.

Tariff policy has been such that grain production has not been protected, and due to more profitable opportunities in other enterprises, it has steadily declined.³ The local argument given is that "the Swiss farmer has distinctly higher production costs than the large over-seas grain areas."

The war years forced Switzerland into a recognition of the dependent situation into which she had drifted as regards her bread supply. Because she was surrounded by hostile nations the import of bread grains was difficult. The voluntary expansion of acreage of 1916-17-18 failed to bring the desired increase in production and she was finally required to use measures of force in an attempt to stimulate grain production. The farmer was required to deliver his grain through the Federal Grain Board. This state agency was, at the same time, required to accept all grain offered.

The Federal Grain Board, set up at that time, paid a bounty of 8 francs per 100 kg (\$1.60 per 220 pounds or approximately \$0.43 per bushel of 60 pounds) over the current market price for all grain grown in Switzerland and delivered through this agency. For grain grown in Switzerland and consumed

¹ Dr. Oskar Howald, Scientific Assistant of the Bauernsekretariate of the Swiss Farmers' Union. "Die Neuregelung der Getreideversorgung in der Schweiz." Brugg, 1929.

² Report of Swiss Farmers' Union 1929, covering year 1927-28.

³ Report of Swiss Farmers' Union 1929, covering year 1927-28.

on the farm, a bounty of 5 to 8 francs per 100 kg (\$1.00 to \$1.60 per 220 pounds) was paid. Since the entire import and export of grain was under the control of the Federal Board it was enabled to carry through its regulations effectively.

The effect of the control measures was to check the decline in grain acreage to some extent and to improve the quality. This latter had also declined with the decreased interest in production.

The measures forcing the expansion of the grain area were removed following the close of the War but the Grain Board continued to function as a stimulus to Swiss grain growing. The movement to establish the Grain Board as a permanent governmental body which should replace the emergency organization was successful as shown by the balloting in the election of March 3, 1929. The purposes of the new organization are to carry on the work of the old Grain Board, i.e., to assure the security of the bread supply by:

1. Encouraging the production of grain in Switzerland.
2. Maintaining adequate supplies of foreign grain.

The money costs to the Federation for the payment of the bonus over the world market price, the milling bounty, and the reduction in freight rates, together with the storage costs on war-housed grain, will approximate 15,000,000 francs (\$3,000,000) per year. To cover this outlay which was formerly spread over the entire bread-consuming population, the milling bonus will be paid out of the State treasury, while the balance will be covered by a slight increase in the international boundary control charges on foreign freight passing in and out of Switzerland. On this basis the bread consumer of the city was won;—he was assured of no increase in the cost to him of his staff of life.

No sudden or revolutionary effect upon Swiss agriculture is expected from the new regulations. It is hoped that the introduction of the new provisions will help to diversify the unbalanced organization of the small, non-capitalistic peasant farmer who at present is too largely dependent upon livestock and the price variations which that enterprise encounters. It is further hoped that this diversity will remove some of the burden now resting upon the producers of milk and meat who have had difficulty in marketing their surplus production.

Grain production is fitted for certain areas in the west of Switzerland where physical conditions are satisfactory. It is hoped it will also become a part of the crop organization of farmers in the mixed farming areas ("Kleegrasswirtschaft"). "Thru this," says Dr. Howald, "is provided an important opportunity for the eventual surmounting of the world agricultural crisis which also exists in Switzerland."

Walter J. Roth

Bureau of Agricultural Economics

PROF. LAUR'S TERMINOLOGY FOR FARM ACCOUNTING¹

Uniform terminology is important in prompt and complete communication of ideas even among people scientifically trained. In the field of farm accounting

¹ *Terminology and bases for an International Agricultural Statistic Founded upon Farm Accounting*, by E. Laur. Report to the Rural Economics section of the Int. Congress of Agriculture at Bucharest, June, 1929. In French, German and English. Brugg, 1929.

the variety of purposes to be served has resulted in many different measures of results, different means of reaching a given measure, and different names for essentially the same concepts. To relieve a situation bad enough when only one country and one language are involved Professor Laur studied the objectives and practices of farm accountants in many countries and has brought out a report in which all the objectives and practices are reduced to a single system of related concepts. Some copies of the report have been sent to leaders in Farm Management, and to Agricultural Economics Departments. Interested persons who have not received the report may apply to Walter J. Roth, Bureau of Agricultural Economics, Washington, D.C., who has a limited stock for distribution.

This report is not a primer or a treatise on bookkeeping, but a series of definitions set up for use in assembling and publishing international statistics of results of farming in different countries. With these definitions thoroughly in mind the bookkeeping results reached by any method or system can be reconciled with others reached in a different way. Some of the more intricate concepts require more work than we in this country are inclined to devote to them, but approximations for these are not inconsistent with the purpose of the work.

BOOK REVIEWS

Research Method and Procedure in Agricultural Economics, by Advisory Committee on Economics and Social Research in Agriculture of The Social Science Research Council [John D. Black, Chairman of Subcommittee]. Washington, D.C., 1928, 2 vol., mimeographed, 468 pp.

Leaders in directing, administering, and doing economic and social research in agriculture have felt for some time, and especially since the passage of the Purnell Act, the need of a careful, broad, unbiased stock-taking of research in that field—what constitutes the field of the social sciences and their relations with each other and with other sciences; the administrative problems; what of the technic and methodology of the longer-developed sciences can be applied to the conditions and problems of economic and social research in agriculture and still meet the basic principles of scientific research; what of the new methods developed by the workers in this newer field will meet the requirements; what modifications in others of the newer methods will be needed; and what further needs in technic and methodology can now be foreseen.

This publication of the advisory committee on economic and social research in agriculture of the Social Science Research Council is a milestone in this work, but it can not be considered as more than a beginning—a preliminary survey which has accomplished much by bringing together so much that should cause the workers in the field not only of the economics and social research in agriculture but those in all fields of science applicable to agriculture to stop, think, and act. It should bring about much immediate good, especially among the less experienced workers and the newer and less developed departments and divisions of the sciences in the State experiment stations and Federal departments. It should also do much to relieve agricultural economics of the criticism so often made, too often justly, that many men undertaking research do not have a clearly formulated and defined problem in mind, but are merely casting out a dragnet hoping that they may be fortunate enough to make a real catch; that while the tools which they are attempting to use in gathering and analyzing data may be of the finest type they are worse than useless in the hands of those who do not know their uses or possibilities; and that the published reports are merely compilations and jugglings of data without clearly thought out and proven inferences and conclusions.

The wide authorship of the handbook has been described in the October, 1928, number of the *JOURNAL*. Its purpose is "to summarize as much as possible of the experience of agricultural economists in planning, organizing, and executing research in the field." It is not intended as a textbook on research methods, but merely to present the details and specific considerations brought to light in the application of formal methods to different problems.

The introduction (pp. 1-20) discusses briefly but in a broad manner the subjects of what is research and science, the essentials of scientific method, the relative value and place of quantitative and qualitative and inductive and deductive analysis in research in agricultural economics, the different methods

of science in classifying facts and discovering their mutual relations and sequences, and social science research.

Part I (pp. 21-35) deals with the choice, the planning, and the execution of a project, and especially stresses the importance of allocating part of the time of men with particular aptitude "for the pursuit of truth for its own sake" to studies looking to the development of basic knowledge rather than practical results; of more careful and thorough planning of projects; of sound preliminary deductive analysis, of exact definition of units and measures, and of judicious weighing and summarizing of results.

Part II (pp. 36-322) deals with methods. A very limited space, about 25 pages, is devoted to descriptions and discussions of the method of analogy, case method, informal statistical method, and experimental method. The statistical method utilizes the remaining space, the subject what statistical method is, definition of terms, errors in data, and the preparation of data for analysis being handled rather briefly. About 80 pages are devoted to sources of data and methods of securing them, the survey method, data of private and public records, supervised records, mailed questionnaires, data from reporters and secondary data being discussed; approximately 175 pages to analysis of data—summarizing, measurement of time-series movements, association analysis, and correlation analysis; and about 25 pages to inference from results. This part of the handbook deals more than any other part with the problems that are peculiar to agricultural economics. It is a rich mine of information, suggestions, experiences, and cautions as to the use of the several methods, and is set forth in general in a clear concise form. It is extremely unfortunate, however, that here of necessity appear more than in any other part of the handbook the handicaps inherent to the conditions under which the publication was prepared and published. A small budget has compelled almost ruthless limitation of space, made impossible the proper digesting, concentration, and coordination of the articles of so many contributors with so varied styles, points of view, and attitudes, and rendered mimeographing rather than printing, which is especially to be regretted when complicated mathematical demonstrations and formulæ are involved, not only advisable but necessary. More time available would have permitted the filling in of some gaps, needed expansion of other phases, the better bringing together of criticisms and suggestions of the different methods, the exclusion of some extraneous matter in some reports and letters and some quite lengthy demonstrations of rather elementary parts of methods, and the one or two personal criticisms that have slipped in.

The three sections of Part III (pp. 323-351), *The Research Approach*, classify research methods on the basis of whether the approach is that of a cross section, geographical or nongeographical, or of a time sequence, historical. Recognizing that "analytical methodology with geographic data is still not greatly developed," the section on this subject consists chiefly of a classification and description of the purpose, scope, and methods used in some of the outstanding studies that have been made in the United States and a discussion of the planes of geographical approach. The section on the nongeographical approach discusses the two orders of "qualitative description"—factual description and analytical description, and is especially valuable for its clear exposition of the place, the importance, and the value of qualitative

analysis in agricultural economics and the dangers and abuses in its use. It is to be regretted that so little space has been given to a discussion of this important subject of what constitutes truly scientific qualitative analysis and how it can be performed. Likewise the section on the historical approach is to be highly commended for the clear statement and illustrations of the necessity of the application of historical method and the especial need in agricultural economics of the critical analysis of sources.

Part IV (pp. 352-402), *The Presentation and Utilization of Results*, discusses the preparation of and use of tables, graphic presentation, the preparation of the report of investigations, and the utilization and methods of making the results available to different classes of the public. Many valuable and instructive suggestions are made, the following of which would have greatly enhanced the value of a large part of the published reports of research, not only in agricultural economics but in all the sciences. As a whole, the suggestions are briefly and concisely stated, but most of them have no peculiar application to agricultural economics and are well covered in easily available text and reference books and some cover details so elementary as not to merit space in a handbook of this nature. Unless the research worker is willing to study carefully text and reference books and both the well and poorly prepared reports of other investigators and to consult freely with his editor, draftsman, and printer with a realization that they can each do much to make his report more valuable, the suggestions in this section will fall on barren soil.

Part V (pp. 403-468), *The Organization of Agricultural Economics Research*, fortunately discusses the problems of policy, relation to other subject matter departments and other functional departments, and cooperation with outside agencies from a much broader standpoint than that set out as its purpose, "the standpoint of the agricultural economist in charge of research in his field." Experiment station directors charged with the administration and direction of research in many fields and often with regulatory duties, the deans and presidents of agricultural colleges, and the presidents of universities responsible not only for the administration, correlation, and coordination of research, teaching, and extension work in their own institutions but also with other like institutions, the Federal Government and outside agencies, and officers of the Department of Agriculture and other Federal departments having charge of research and in some cases the coordinating of the work of the Department with that of the State agricultural colleges and experiment stations should find this part of the handbook helpful. The points of view of economic research, the localization and classification of its problems, its research program, its relationships with the natural and other social sciences, its relation to and administrative arrangements with other functions—teaching, extension, regulatory bodies, and fact-gathering activities, the accrediting of results, relationships to research in other institutions and noncoordinating agencies, and cooperative procedure in formulating projects, in carrying out joint or parallel projects, and the utilization of results are each discussed more or less at length. The numerous delicate questions covered by this section have been as a whole fairly and broadly discussed. While a considerable number of very pointed criticisms are made of the training and attitudes of the workers in different fields, little or no spirit of prejudice or partiality appears, and the

special fields and work in which the authors are engaged have received some of the more severe criticisms. In most cases the burden of proof is with the individual to show that the authors have done more than to state frankly and boldly that which he is willing, or must, admit to himself but does not like to hear from others. The alternatives in matters of policy and the classification of research problems in agricultural economics set forth, and the generalized outline of research in farm management submitted as a guide in preparing a research outline, will render material assistance to agricultural economists directing the work, as will also the realization that "reducing principles of economics to a working basis is the major task of the moment" and "that few indeed of those who have prosecuted studies have sufficiently tested the validity of their results, or have sufficiently analyzed their project from a methodological point of view to see what light it throws on methodology in later projects of the same general type." The last section of this part brings together important and interesting data regarding the scheme of overhead organization in the State experiment stations to handle research, teaching, and extension work, the allocation of the State experiment stations funds to economic research, the selection of the research staff, provisions for training graduate students and sabbatical leave, and the terms of service of research workers.

The subcommittee charged with the preparation of this publication are to be commended on their work, the fewness of gaps of real importance, the general good balance both of the space assigned to different subjects and of the methods of handling them, and the comparatively few inconsistencies that appear. It is to be hoped that this publication may be merely a forerunner of a series of publications covering methodology in general or single methods or phases of single methods as they are proven or modified or new methods are developed.

Fred G. Harden

Office of Experiment Stations

Agricultural Reform in the United States, by John D. Black. New York: McGraw-Hill Book Company, Pp. 502.

Since Professor Black wrote his "Agricultural Reform in the United States," farm relief agitation has become crystalized into law. The Agricultural Marketing Act is on the statute books of the nation. The Federal Farm Board is a reality. It has \$500,000,000 at its command with which to come to the aid of agriculture. Yet it is safe to assume that farm relief will be a national issue for some time to come. At least this is the logical conclusion drawn by the reviewer in attempting to measure the effectiveness of the remedies prescribed by Congress in the light of the analysis of these remedies by Professor Black.

The book went to press in April, 1929. The Marketing Act was passed the following June. The economist spoke before Congress acted. Hence it is certain that the author's position contains no bias reflecting the opinions of Congress as embodied in the law. Evidence is not lacking that leads one to believe that Congress also acted quite independently of the opinions expressed by the author. Independence of thought and action are virtues not to be overlooked. Hence it may not be amiss to speculate upon the application of the measures

adopted to the situation as depicted in the book under review. Although the author expresses the hope that his book will "be looked upon as a timely contribution to the solution of fundamental problems of national agricultural policy," it is not assumed that his hopes went so far as to expect Congress to follow his advice, even though the document had been available for mature consideration by it. It is not clear that Congress is in the habit of following the advice of economists. Notwithstanding, it is interesting to compare the offerings made with an evaluation of the demands so urgently presented during the past five years.

Relief agitation was prone to revolve around problems described by such phrases as, "making the tariff effective for agriculture," "protection for all or protection for none," and "equality for agriculture." The handling of the exportable surplus figured prominently in the discussions. Measured by these standards, the Agricultural Marketing Act can hardly qualify as a relief measure. It is doubtful if the Federal Farm Board considers it as such. To be sure, one of the purposes of the Act, as described in its title, is "to place agriculture on a basis of economic equality with other industries." But the powers at the disposal of the Board are far from adequate for handling the problems indicated by the above phrases. Price-elevation powers as contemplated in the equalization-fee plan, the export debenture scheme, and the domestic allotment proposals, are wholly lacking. The Board has a \$500,000,000 revolving fund which may be loaned to cooperatives for certain specified purposes in such a manner as "to insure the reasonable safety of the loan"

Indications are that the Federal Farm Board interprets the law as making cooperative organizations the channels through which the welfare of agriculture is to be promoted. Professor Black in his book devotes twelve out of five hundred pages to a chapter on "Cooperative Action." While the reviewer is more hopeful than the author regarding the possibilities for substantial betterment through organized effort along cooperative lines, he is ready to admit that whatever may be the merits of the cooperative movement, it is not of sufficient force to cope with a number of the unusual problems with which agriculture has been faced during the past nine years. Cooperation has an established place in the promotion of marketing efficiency and in the improvement of marketing practices. It is deserving of hearty support. But to expect it to raise agriculture out of a depressed situation would be unfortunate. Cooperation deserves a better fate. Professor Black's conclusion is that "although in a period of several decades and more, cooperative action may contribute in a very important way to agricultural betterment, its help during the next five or ten years will not go very far toward relieving the present pressing situation." He is probably right in his surmise that relief through cooperation won a large measure of political support from the fact that many considered it the least harmful of the remedies proposed and seriously considered.

The act in question also lays stress upon loans to stabilization corporations owned and controlled by cooperative associations, and promoting price insurance on the part of cooperative marketing organizations. Professor Black dismisses these two points with only fifteen pages worth of attention. As he convincingly demonstrates in his discussion of the surpluses, the attempt to carry these from year to year is likely to be a two-edged sword with a back-slash quite as dan-

gerous to the wielder as the forward thrust is to the enemy. He is more hopeful regarding the abilities of stabilization corporations in handling the seasonal surpluses. Price insurance, as contemplated by the discussions in Congress, does not meet fundamental accepted requirements of an insurance risk. However, its use is optional and it is safe to say that the Board will put it into effect only after thorough study and careful analysis of its possibilities. The point to be emphasized is that the three main lines of attack specified in the Agricultural Marketing Act are not those which received the greatest attention in farm relief discussions, nor are they the ones considered most effective by the author. Hence, it is to be concluded that the measures adopted by Congress cannot be interpreted as relief legislation within the usual meaning of the term. Rather do they provide means for a more efficient marketing program, and in a substantial manner create machinery for the formulation of a constructive long-time program for agricultural improvement.

By way of generalization, Professor Black's work is broadly conceived and executed with a giant's stride. None will accuse the author of a narrow-minded approach. While many will be inclined to criticise the steam-shovel method of handling certain portions of his materials and disagree with the conclusions formulated, none will say that he has failed to consider the problem in all of its broad aspects. In the reviewer's opinion the book will remain for sometime to come the outstanding students' encyclopedic reference on the subject of agricultural reforms. When more thorough statistical studies are made of the numerous conundrums involved, and when individual phases are developed in greater detail and accuracy, as they are sure to be, then, and then only, will a more reliable treatise appear. The author indicates clearly in the preface that the book was prepared in a limited space of time. He drew generously upon the assistance of collaborators. Much of the book consists of coordinating and interpreting available information. Portions of it had already appeared in print under the author's name. It is not essentially the product of original research. Many of the topics are dealt with in a high light fashion. In some instances the lights are so high that they are dim. The chapter dealing with tariff revision bears the earmarks of a great deal of digging plus no small amount of constructive interpretation of an original character. But even here, the author would probably be the last to support the view that final judgment had been passed.

The task undertaken in writing this book as expressed by the author merits emphasis. He says,

"The intent of this book is to state the conditions of agriculture as they now are, explain the various remedial measures proposed and weigh them as to their adequacy to cope with these conditions, and outline the remaining measures that need to be taken."

The thesis is a familiar one. Agriculture in comparison with other industries is in a bad way. The nation has done much for the farmer on the land, but it has done more for the man in the city; and "farming is of such a nature that it needs to have vastly more done for it than the city if it is to maintain equality with the city." The relief programs are dissected. Surpluses—their kinds and nature—are classified. Holding policies and carry-overs are appraised in terms of probable influences upon prices. These discussions are basic in

weighing the merits of price-raising proposals through Government action. Of these plans, tariff revision, the equalization fee, export debentures, and allotments to producers are the most important. Professor Black takes the stand that as long as the nation maintains its present protective tariff policy, the other price-raising measures with all their objections are justifiable. He does not advocate any one of them, but rather a combination. The prices of certain products can best be raised by means of import duties. Others should be handled by the equalization-fee method. The export debenture and the allotment systems each possess superior merits in treating with certain specified groups.

The reviewer is unable to become enthusiastic over the author's rather pronounced leanings toward the domestic allotment scheme. A system which forsores a continuous check upon the commodity from the grower's hands until its final consumption is to be commended as a mental exercise for the economic minded, but as a method of assisting the industry—that is quite another matter. Prohibition enforcements would, in all probability, appear as a kindergarden undertaking in comparison.

The recommendations contained in parts IV and V of the book are more nearly in line with those falling within the scope of the *Agricultural Marketing Act*. At least this is the reviewer's interpretation of the Act. These sections deal, in addition to questions of cooperation, stabilization through corporations, and price insurance, with such matters as more extended and more accurate statistical information—foreign and domestic—regarding agricultural activities; adjustments in the size of farm operating units, and the formulation of land utilization programs. Marketing, transportation, farm labor, agricultural credit, and taxation are brought into the picture. While the emphasis by Congress was placed upon assistance to agriculture through cooperative association, the Act does contain side-line clauses which are of primary significance. For instance, the Board is authorized and directed

"Sec. 5

"(3) To keep advised from any available sources and make reports as to crop prices, experiences, prospects, supply, and demand, at home and abroad.

.....
 "(5) To make investigations and reports and publish the same, including investigations and reports upon the following: Land utilizations for agricultural purposes; reduction of the acreage of unprofitable marginal lands in cultivation; methods of expanding markets at home and abroad for agricultural commodities and food products thereof; methods of developing by-products of and new uses for agricultural commodities; and transportation conditions and their effect upon the marketing of agricultural commodities."

The Board has already taken steps to assist the Department of Agriculture in extending its foreign information service. It will no doubt find it necessary, as its program develops, to call upon the Department of Agriculture to intensify its activities in a number of the above specified fields. All will agree with Professor Black that a program of agricultural reform involves many considerations not usually included in the term "farm relief." Decades will be required to put into effect many of the required changes. When they are in

motion, action along other lines appear necessary. Hence, agricultural reform is a continuous process. *Agricultural Reform in the United States* is a distinct contribution to the better understanding of this process.

Asher Hobson

University of California

The Farmer's Standard of Living, by Ellis Lore Kirkpatrick. New York: The Century Co., 1929, 293 p.

Mr. Kirkpatrick has spent eight years in studying the standard of living of farmers. He has at his disposal a large body of statistical data of the Bureau of Agricultural Economics, United States Department of Agriculture. At the same time, perhaps no one in the country is better qualified, on the score of personal contacts with farmers and their families, to discuss farm standards of living. The book is both an analysis of statistics and a sympathetic picture of contemporary farm life as the author sees it.

Expenditures to the value of \$1,598, including the foods and services furnished by the farm itself, are believed by the author to be "somewhere near typical of the prevailing standard of living among white families of moderately prosperous farming sections." There are, however, wide differences in the prevailing standard of living in different regions. The value of the living of tenant families is about eighty per cent and that of hired-men families about seventy-two per cent of that of owner families. The one small study of colored farm families in the South indicated that they were less than one half as well off as the white farm families in the same localities. The value of farm families' living runs somewhat higher than that of industrial families, according to available studies, but the author believes that the data for comparison are inadequate.

One of the most important and timely subjects discussed is the health maintenance of farm families. Farm families and industrial families apparently spent nearly the same annual sum for the maintenance of health—about sixty dollars; but physician's care, hospital service, and public health supervision are much less accessible to farm families. There is a good deal of evidence that farm children have more defects than children in large cities, yet farm life may strengthen resistance, so there is perhaps no more actual sickness on farms. Farm people and industrial people apparently lose about the same amount of time from illness every year. Morbidity rates of farm and city are, of course, not comparable, owing to the different age composition of their populations.

It is significant, and typically American, that as the value of his living increases, the farmer goes on working his eleven hours or more a day just as before. With expanding prosperity, his wife also takes very little more time for leisure. Yet, the increased expenditures for certain "advancement" goods, radios for example, which are typical of rising standards of living, imply that someone should take time to enjoy them. Apparently, then, it is the children who get the greatest advantage from these leisure-consuming goods. Again and again the farmer and his wife bespeak for their children the richer and more varied life that they feel they are themselves too old to learn.

The author, himself once a farm boy, devotes a chapter to the nonmaterial

satisfactions derived from farm living, satisfactions which to many Americans must always outweigh the pleasures of the town. To grant this is not to ignore the need of every farm family to "have access to the goods, facilities, and services which, through efficient use, will insure both the physical and the spiritual well-being of its members." The problem of making marketing centers and, more particularly, health supervision and cultural advantages accessible to farm families is the great problem as the author sees it—and it is by no means an insuperable one.

The book is the first attempt to bring together in book form the available facts about farm family living. Its chief purpose is to stimulate interest in the improvement of farm life and to provide a point of departure from which further and deeper analyses may later arise. This purpose it is admirably adapted to fulfill.

Elizabeth E. Hoyt

Iowa State College

Agrarpolitik, by Friedrich Aereboe. Berlin: Paul Parey, 1928, pp. IX, 619.

The prolonged severe depression of German agriculture has created a vast quantity of literature. Many a proposal has been made to modify and remedy the present situation. Quite a few treatises have attempted to outline comprehensive programs for relief, and have tried to shape a new national agrarian policy to bring German agriculture to a healthy state.

Such is the case with this "Agrarpolitik" by Dr. Friedrich Aereboe, Professor at the College of Agriculture and at the University of Berlin, who is one of the recognized leaders of German farm economics. Its point of approach differs widely from that of most writers on the subject. It reflects the experiences and convictions Professor Aereboe has acquired during his long life as an outstanding leader in the practice and science of agriculture, during which he has never lost close contact with the tillers of the soil. He does not lose sight of the social point of view, but his approach to the social standpoint is by the way of the individual.

The book is divided into two principal parts. The first part lays the foundation of a sound agrarian policy; and this foundation is largely private economics.

The author traces the economic forces active in the historic development of agriculture from its earliest beginnings. He outlines the place of agriculture as a basic industry in the present economic system. The rôle of the State in shaping the social-economic structure of rural life at the various stages of development is shown. The conditions of the old and of the new world are contrasted. A discussion is given of the economic principles involved in the determination of land values and of farm values under the influence of improved methods of production and of changing price relationships. The attention is focused on the theory of intensity, the dependence of types of farming on natural surroundings, on economic location, and on the behavior of prices.

The systems of farming as they have been developed in central Europe make the author emphasize the problems of farm labor, tenancy and farm

ownership. Extraordinary attention is given to the question of the most advantageous size of the farming unit. Family farming is contrasted with large-scale farming as to economic productivity, profitableness, and social desirability. The difficulties encountered under the prevailing socio-economic structure of eastern German farming are set forth at length, the leading thought being that large-scale farming in its present forms is socially as well as economically least desirable from a national point of view. It is the firm belief of the author as his essential thesis that everything possible must be done to preserve the healthy status of family farming as a primary source of the well-being of the nation. He considers it the task of agriculture to keep as many healthy people on the farm as possible. The buying power of a large rural population living on family farms is regarded as an important factor in the prosperity of city industries. Aereboe's notion of sound agrarian policy is one that does not disturb, nor react against, the workings of the constructive forces arising out of personal ability and thrift. He concludes after a business analysis of farming that the "Bauer", the owner-operator of the family farm, is the ideal agricultural entrepreneur, who contributes most to productive and efficient farming. The shortcomings of cost-of-production studies are described and discrimination is made of the limited possibilities of utilizing them in the formation of national policies.

This attitude always in mind, in the second part of the voluminous treatise the author takes up in detail the most important present problems of German agriculture, such as those relating to population, distribution of land, rural education, taxation, tariff duties, credit, farm labor, land settlement, and rural reorganization.

He starts off with an analysis of food supply and population growth. Severely attacking the principal ideas of Malthus, he states that under modern production methods consumption does not keep pace with the increase of production. Price recession becomes necessary to keep output and consumption in line. Problems of surplus population are looked upon as temporary maladjustments.

Disturbances in the rate of progress in agricultural production are due to the lagging education of the small farmer, whose knowledge does not follow closely enough the advancement of technique and science. A radical reorganization of the present system of rural education is needed and definite proposals in that direction are made. More training, better training, and more diffused education will serve to replace the aristocracy of birth and money by a new democracy in which superior intellect and ability furnish the leadership.

Professor Aereboe feels urgent need for a thorough modification of the existing distribution of land ownership and of the traditional regulations regarding the inheritance of land. Under the present system, there are only three possibilities for a growing rural population—increase of dependent farm labor, migration and flight to the cities, and emigration abroad. The author recommends strongly the parcelling out of all large estates, not in a compulsory way by demagogic expropriation, but by the free and unrestricted play of economic forces. He calls vehemently for strict enforcement of the federal laws, abolishing all legal privileges given to the large-estate holder under the social order of the past.

Aereboe sees in taxation reform another central problem in the program of rural reconstruction. He challenges the present system of income taxation as one of the worst enemies of family farming. Large estates have been able to get around a crude income taxation by a corrupt method of self-assessment. With the small farmer the income tax has become virtually a property tax. The solution is the development of a general land tax, with a progression based on the productive capacity of the soil, and further taxation of inherited wealth.

Naturally there will be some severe critics of these proposals, as there were some ten years ago when Professor Aereboe presented a similar rural taxation program for the German Republic.

Particular emphasis is placed upon the term "justice" as an essential feature in the whole organization scheme, but Professor Aereboe advances a proposal for rural taxation reform which in our belief will not fit into the general German taxation system. A reform of rural taxation on a radically different base, which does not reach all industries at the same time, can not do justice to all concerned. On the other hand it does not seem to be practical either, particularly since the income tax, which is so severely attacked by Professor Aereboe, has eventually become the central part of the whole German taxation system. Apparently the author in his taxation program overlooks somewhat the difficulties and handicaps connected with a general return to the unflexible system of revenue taxation.

In a mistaken policy of increased sugar taxation the author sees discrimination against small-scale intensive farming. But, alcohol taxation should be increased considerably to release sugar beet production from undue pressure of taxation and limit further expansion of the potato output, which is now a basic crop for the large farms in the East.

In his theory of foreign trade, Aereboe accepts the essential soundness of the principle of comparative advantage and the beneficial effects of free trade. But, since there is little tendency now toward the goal of international division of labor, Aereboe favors protection of all products of the dairy, poultry, and livestock industries, and of truck farming, and free trade in grain and concentrated feeds. Again, the leading thought is protection and relief for small-scale family farming.

The general abandonment of all tariffs step by step on an international basis, preceded by a thorough taxation reform, is the everrepeated formula for long-time agricultural policy.

Aereboe also provides a place for market and price analysis, for outlook work, and for a further development of the market reporting system.

The discussion of rural credit organization distinctly shows the author's intimate acquaintance with the financial problems of the farmer and his wide experience with the working of rural credit institutions. He blames unsatisfactory appraisal methods for an unjust distribution of credit. Mortgage credit is to be looked upon as the basic type of agricultural credit, represented best by the "Pfandbrief" system. The vendibility of this paper makes mortgage credit flexible and adapts it to the various needs of the farmer. Aereboe is a warm intercessor for cooperative credit organization as a considerable aid to the solvency of the small farmer.

Reform is also needed in the policies regarding hired farm labor. Increased

wages and opportunities for land settlement must keep open the agricultural ladder.

There will be much room for discussion and disagreement as to the leading principles and proposals made by the author. The theoretical economist will find in the first part of the book some weak points in the meager discussion of value and price, in his exposition of the theory of rent, in his incomplete statement of the principle of diminishing returns, on which his theory of intensity is based. There also will be much bitter resentment against his truthful but pitiless criticism of institutions. But there is no mistaking the keenness and genuineness of his understanding and sympathy.

No one in any way interested in German agricultural policy can afford to overlook this remarkable contribution of the recognized master of farm economy to the literature of agricultural economics.

Kurt Schneider

University of Bonn

America Challenged, by Lewis F. Carr. New York: MacMillan. 1929. 322 p. \$3.50.

Mr. Carr has produced a very readable book. His analysis of the agricultural depression and the reasons for it is decidedly the best I have seen. After reading the book one understands the appropriateness of the title. Carr points out that agricultural depression is almost as old as agriculture itself, so there has always been a farm problem. He presents this problem as a challenge to American democracy. We have solved so many other problems that we ought to be able to solve this one if we put our minds to it.

He gives rather a complete account of the agrarian movement from the early days of American agriculture. The trouble began early. The antagonism that grew up between the North and the South was basically agrarian, the South being agricultural, the North being dominated by industrial affairs. The Nullification Act passed by the South Carolina Legislature long before the Civil War (in 1832) was a protest of agriculture against Government subsidies to those who manufacture things farmers must buy, in the guise of a tariff. Throughout the book the author emphasizes the part tariff legislation has played in the agrarian movement. Even the Civil War resulted from differences between rural and urban points of view. The Greenback movement in the late 70's and the Populist movement in the middle 90's were merely expressions of discontent amongst farmers.

The disadvantages under which agriculture labors have been augmented since the European war by increased freight rates, higher wages in the industries, and the resulting increase in price of what the farmer has to buy. The author somewhat pessimistically remarks "America can either endeavor to silence this discordant voice of agriculture forever—by letting agriculture decline until it dies—or she can attempt to bring that voice into harmony with the urban, industrial sentiment." He points out that the problem is largely a psychological one. The trouble is in the lack of comprehension of the condition of agriculture on the part of city people. They have been misled by the kind of articles fed to the magazines they read. Instances have been played up in which some farmer by unusual methods has been able to make large

profits mainly because of fortunate weather conditions or price situations, which facts were not sufficiently emphasized.

While the author's presentation of the basic causes of agricultural unrest is the most adequate I have seen, his suggestions as to remedies cannot be regarded so highly. He was amongst those who were sadly disappointed by the failure of the McNary-Haugen Bill. He believes it would have worked, but would not, of course, entirely solve the problem. His principal argument in favor of the measure was that if it raised the price of all our major agricultural products equally, then it would not have resulted in any great increase in the production of any one of them, for they would then be competing for the land just as they are now. He overlooks the fact that if the major enterprises were all made profitable the result would almost certainly be to bring back into cultivation the millions of acres that have been thrown out since the war, and probably to bring into cultivation other millions of acres of new land. He assumes that the principles of the McNary-Haugen Bill could be applied to each of the major enterprises with equal facility. Economists are pretty generally agreed that these methods could be applied to wheat and cotton, but not to corn, oats, and hay, except that in the case of corn they could be applied indirectly through the hog industry.

He makes another suggestion with which economists will probably not agree, and that is that a law be passed giving some gigantic private organization monopolistic powers to buy up products, sell the surpluses abroad for whatever they would bring, and then sell the remainder for home consumption at enhanced prices, distributing a fair share of the profits to producers. This suggestion appears to be entirely impracticable.

Throughout the book there is insistence that lowering tariffs on articles farmers buy is necessary to the solution of the agrarian problem.

Agriculture owes Mr. Carr a debt for stating so clearly the conditions under which the business of farming is conducted. If city people would read this book and learn how serious the problem is, it might be possible to get remedial legislation. The particular suggestions the book makes for solving the problem do not appear to contribute to its solution.

W. J. Spillman

Bureau of Agricultural Economics

What About the Year 2000? by George M. Peterson. Harrisburg, Pa.; Mt. Pleasant Press. 1929. 168 p. \$1.00.

Here is an analysis of researches in certain fields of land economics and of questions needing further study so that sound national land policies may be laid out. The use of land for towns and cities, recreation areas, forests, and farms is considered from the standpoint of the present situation and its causes, and how best to meet the needs of the future population.

A slackening of population growth and increased urban concentration is expected in the future. To the author, the "significant fact" about the population estimates presented is that they are not based on the ability of this country to feed so many people. To the reviewer, however, it is more significant that population growth is slowing up so fast that this ability may be

taken for granted until the nation is conquered from without, or until natural resources are exhausted to a much greater degree than appears likely within a century. One wonders just what limits "all the possible reductions in the death rates" on page 25 to an expectation of life of sixty-five years, and also why 1920 death rates and stationary population data are not used instead of 1910.

Little planning is found to have been done regarding utilization of land. Most of it has dealt with urban problems, chiefly the internal arrangement of cities rather than external relationships. Still more facts are wanted in the first field regarding such matters as recreation and street space, trade areas, zoning, and optimum density. Larger problems needing particular attention include decentralization tendencies in large cities, and advantages of developing more small and medium-sized cities rather than continuing the crowding in larger centers. Traffic jams and "no parking" rules seem to be particularly upsetting to the status quo of a metropolis. It is pleasing to note of late how frequently people are questioning whether urban efficiency really does increase indefinitely with size of city.

Discussing land for scenic and recreation uses, more coordination is felt necessary between the National and the State Park systems in present operation and in planning for future population needs. Another problem is the supplementing of this system with many local parks, or natural preserves, readily accessible to cities.

Forest land, which has been chiefly mined in the past, should be cropped in the future. More facts are needed about methods and possible extent of decreasing consumption and increasing production so that the two may be balanced at the optimum level.

The discussion of agricultural uses of land draws heavily on the work of O. E. Baker. A pre-war belief that population would increasingly press on food supply is shown to have broken down in the postwar period when important improvements in farming methods (particularly in livestock production), increased replacement of horses by tractors and trucks, and changes in consumption habits, brought about an increase in production in spite of decreases in farmers, in acres farmed, and in numbers of several classes of livestock kept. Future anticipations (using 1919 as a base) include the providing for 13,000,000 additional persons by an increase in net agricultural imports, for 12,000,000 by better livestock and shifts in type, for 19,000,000 by more productive crops and intensive methods, for 10,000,000 by savings in marketing, processing, and preserving foods, and for 20,000,000 by further substitution of mechanical power for horses. This is a total increase of 74,000,000 persons, practically all that is expected by 2000 A.D., and the total is provided for on the 1919 acreage. During the near future it may even be desirable to continue the shift of sub-marginal farm acres to a less intensive use, and of sub-marginal farmers to other occupations. Probably this movement will go too far, as other uncontrolled movements have done before, but this should result in certain things the author desires, i. e., farm incomes more comparable with those in other occupations and a higher standard of living on farms.

Throughout the book the call is for more facts about land utilization and more planning based on these facts. As agricultural extension work has taken

research in agriculture to farmers and affected production noticeably, so it is hoped research in land utilization may be taken to the public and its active support of land planning obtained.

So much for content. The book is semi-popular in style, perhaps too lacking in detail and reference to source of material to please the scientist, yet failing somewhat to entertain and hold the general reader. The discussion is disconnected in several places, perhaps because of the large number of critics and committee men whose ideas were reconciled and incorporated according to the foreword and acknowledgements. Possibly this also explains minor errata not mentioned in the insert, and such usage as "data..is" (page 24) and "need..are" (page 138). Nevertheless, the book undoubtedly has a place in the endeavor to improve the land utilization of the future.

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- Secrétariat des Paysans Suisses, E. Laur, Director. *Recherches relatives à la rentabilité de l'agriculture, 1926-27*. IIe partie. Berne: Imprimerie S.A. 1928. pages 362-454.
- Sorokin, Pitirim, and Zimmerman, Carle C. *Principles of Rural-Urban Sociology*. New York: Henry Holt and Co. 1929. xv, 652 p.
- Comish, Newel Howland. *Co-operative marketing of agricultural products*. New York: D. Appleton & Co. 1929. \$3.50.
- Harms, Dr. Bernard, ed. *Zeitschrift des weltwirtschaftliches Archiv*. 30 band, Heft 1. Jena: G. Fischer. 1929. 555 p.
- Killough, Hugh B., and Lucy W. *Raw materials of industrialism*. New York: Thomas Y. Crowell. 1929. 428 p. \$3.75.
- Preussische Zentralgenossenschaftskasse. *Die Lage der landwirtschaftlichen Grossbetriebe in den Ostlichen Landesteilen*. [By Dr. Karl Brandt.] Berlin: Paul Parey. 1929. 130 p.
- *Richtlinien für die Durchführung von Ortstaxen in Rahme der landwirtschaftlichen Kreditkontroll*. [By Dr. Karl Brandt.] Berlin: Paul Parey. 1929. 69 p.

BOOK NOTES

Waugh, Frederick V. *Quality as a determinant of vegetable prices; a statistical study of quality factors influencing vegetable prices in the Boston wholesale market.* New York, Columbia university press; [etc., etc.] 1929. 154 p. (Studies in history, economics and public law, ed. by the Faculty of political science of Columbia university. no. 312)

Many analyses have been made of various aspects of the prices of many commodities, but few studies requiring the technique of multiple correlation have been made to show how prices of various parcels of a commodity differ depending upon the quality of the parcels. Dr. Waugh's studies of vegetable prices are among the earliest of this nature and his book presents the results of three of these studies in a very interesting and readable manner. He also points out the practical application of these studies and suggests the possibility and need of further inquiry concerning quality differentials in prices.

Three separate analyses are discussed: one of asparagus prices, one of tomato prices, and one of cucumber prices. All deal with prices on the Boston wholesale market and each is concerned with prices in a single marketing season.

Aside from its importance to those interested in the Boston vegetable market, the immediate and greatest importance of the book is that it illustrates a method of measuring the way in which prices vary with quality—a method which is applicable to commodities which are not sold by grade or for which the grades do not provide a satisfactory measure of differences in quality.—From a review by E. J. Working.

Die Lage der landwirtschaftlichen Grossbetriebe in den östlichen Landesteilen, by Preussische Zentralgenossenschaftskasse. Berlin: Paul Parey. 1929. 67 p.

Presents the results of a survey of the indebtedness of 5,130 farms over 100 hectares (247.1 acres) in size, located in north-eastern Germany. The survey represents 38 per cent of all farms, and 49 per cent of all farm land in farms larger than 100 hectares. Owner-operated farms had an average indebtedness of 41 per cent of their total assets and tenants were indebted to the extent of 46 per cent of their assets. The credit was to the greatest extent supplied by farmers' cooperatives.—P. G. M.

Richtlinien für die Durchführung von Ortstaxen im Rahmen der landwirtschaftlichen Kreditkontrolle, by Preussische Zentralgenossenschaftskasse. Berlin: Paul Parey. 1929. 130 p.

A handbook setting up uniform methods of procedure in farm appraisal. It discusses briefly the procedure and formulae for arriving at the credit security value of owner-operated, and tenant farms considering in detail markets, size, soil, crops, pasture, woods, buildings, equipment, etc. The security requirements of the various types are considered separately. A concise workable handbook.—P. G. M.

Toronto, University. *Contributions to Canadian economics*, v. 1, 1928. [Toronto] The University library, 1928. 100 p. (Its Studies. History and Economics)

In the preface to this initial volume of a new series, E. J. Urwick states that "it has been a source of frequent complaint among Canadian economists that no medium existed for the pooling of information on economic subjects of particular interest to Canada." This new series is designed to fill this need. It contains six papers, of which the following are of especial interest to agricultural economists: An introduction to Canadian economic history, by James Mavor; Cycles of unemployment in Canada, by G. E. Jackson; Bibliography of research work, by Harold A. Innis; A bibliography of publications on Canadian economics during 1927-1928, by Harold A. Innis.

Van Stone, J. H. *Raw materials of commerce*. A descriptive account of the vegetable, animal, mineral and synthetic products of the world and their commercial uses. [London] Sir I. Pitman & Sons, Ltd., 1929. pt. 1.

Contains a general introduction to the series which is to be issued in 24 fortnightly parts. This number is Section 1 of part 1, and treats of cotton, flax, and jute only.

Conference on unemployment, Washington, D.C., 1921. Committee on recent economic changes. *Recent economic changes in the United States*. Report of the Committee on recent economic changes, of the President's Conference on unemployment. Herbert Hoover, chairman. Including the reports of a special staff of the National bureau of economic research, inc. 1st ed. New York [etc.] McGraw-Hill book company. 1929 2 v.

In addition to the report itself certain investigations were made under the auspices of the National Bureau of Economic Research, among which are the following: Consumption and the standard of living, by Leo Wolman; Marketing, by Melvin T. Copeland; Agriculture, by Edwin G. Nourse; Price movements and related industrial changes, by Frederick C. Mills; Money and credit and their effect on business, by O. M. W. Sprague; Foreign markets and foreign credits, by James Harvey Rogers; The national income and its distribution, by Morris A. Copeland. This material is introduced by Edwin F. Gay and reviewed by Wesley C. Mitchell.—M.G.L.

The Commercial. *American cotton annual review, August 29, 1929*. [Manchester, Eng.] Manchester guardian, 1929. 48 p.

Among other articles, contains the following: Consumption prospects for 1929-30, by Alston H. Garside; Crop and price relationships, by John A. Todd; Smallest carry-over for four years, by G. W. Fooshe; Federal Farm Board's plans, by G. W. Fooshe; A square deal for the shipper, by A. B. Cox; and, New contracts for the co-operatives, by C. O. Moser.

Hayes, A. W. *Rural sociology*. New York [etc.] Longmans, Green and Co., 1929. 598 p. (Longmans' social science series)

This volume is a text in the general field of rural sociology intended according to the author to present rural social life "not as a separate and distinct entity

apart from the larger social life of state and nation, but as a vital part of society."

Shelton, W. Arthur. *The weekly wholesale price index of the National fertilizer association*. Washington, D.C. National fertilizer association, 1929. 47 p.

"Since July 9, 1927, The National Fertilizer Association has compiled a weekly index of wholesale prices covering fourteen groups, which now include 456 items. This is probably the most general weekly wholesale price index published. In scope it may be compared with the monthly wholesale price index of the United States Department of Labor, which includes 550 items, and with the monthly index of the Canadian Department of Trade and Commerce, which includes 502 items. The National Fertilizer Association index is also unique in that it is probably the first general price index that has been placed on the three-year price base, 1926-1928. From January 9, 1924, to the end of July, 1927, a weekly wholesale price index of 109 heavily weighted items was published, and that index was broadened to include 456 items in July, 1927."

Southwestern economics conference, Atlanta, Ga., 1928. *The industrial South*. Emory University, Ga., Banner press, 1929. 95 p.

"This book is a compilation of the papers submitted to the Southeastern Economics Conference, at Atlanta, Georgia, November 8 and 9, 1928. The conference was a meeting of the economics professors of the Southeastern States, called for the purpose of stimulating the economists of this territory to further research."

The titles of the papers and their authors follow:

Analyzing ourselves in the South, by Broadus Mitchell; The industrialization of the South, by R. P. Brooks; Decentralization of industry in the South, by Marcus Whitman; Some conditions and attitudes of southern cotton mill villagers, by Lois MacDonald; The economics of welfare work in the cotton mill villages of the South, by Jean Davis; Cooperation and the problem of farm relief, by E. M. Kayden; Rural banking problems, by J. V. Bowen; Problems in the social control of banking, by H. L. Severson; Recent trends in southern taxation, by J. W. Martin; Contents and trends of business school curricula in the South, by T. W. Noel and C. B. Wray.

Walworth, George. *Trade rings around the farmer; co-operative agricultural policy in relation to competitive combines*. Manchester, Co-operative union, limited, 1928. 15 p.

"A call to arms by the Co-operative union, which here supplies, in pamphlet form, a selection of warning figures relating to the foreign competition and home trade rings which are threatening the British farmer." (Noted in the Economist [London] Nov. 3, 1928, p. 805.)

U. S. Tariff commission. *Onions. Report . . . to the President of the United States*. Differences in costs of production of onions in the United States and in the principal competing country, as ascertained pursuant to the provisions of section 315 of title III of the Tariff act of 1922. Washington, U. S. Govt. print. off., 1929. 83 p.

The report contains information on production, imports, domestic consumption, marketing and conditions of competition, prices, cost of production, transportation costs, and a comparison of domestic and foreign costs of production.

Great Britain. Empire marketing board. [Publications] E.M.B. 15. *Oranges, world production and trade*. Memorandum prepared in the Statistics and intelligence branch of the Empire marketing board. London, H. M. Stationery off., 1929. 75 p.

"The Empire Marketing Board has received applications from time to time from certain Colonies for assistance in establishing or developing an orange export industry. At the same time the rapid development of the world's orange production and trade during the last few years and the increasing difficulty which producers in some countries find in disposing of their crops at remunerative prices, have drawn attention to the question whether orange production may possibly be in danger of developing too rapidly.

"The Fruits Committee and the Agricultural Economics Committee of the Board accordingly suggested that the Board's Statistics and Intelligence Branch should undertake a statistical survey of the production and consumption of oranges, in order to serve as some guide in estimating the future possibilities of the orange market.

"The memorandum deals only with the quantitative aspect of production and trade; the question of quality, important though it is, is introduced only in so far as it affects, or is likely in future to affect, the volume of oranges entering world trade. No attempt is made to consider such questions as the economics of production, market prices and transport costs."—Foreword.

Ford, Henry. *My philosophy of industry* . . . (an authorized interview by Fay Leone Faurete) New York, Coward-McCann, 1929. 107 p.

In a brief section entitled *A New Age for the Farmer* (p. 8-10) Mr. Ford writes:

"Large corporations, whose sole business it will be to perform the operations of plowing, planting, cultivating, and harvesting, will supersede the individual farmer, or groups of farmers will combine to perform their work in a wholesale manner. This is the proper way to do it and the only way in which economic freedom can be won."

STATE PUBLICATIONS

Compiled by Mary F. Carpenter, Library, Bureau of Agricultural Economics,
U. S. Department of Agriculture

ARIZONA

Arizona. College of agriculture. Agricultural extension service, Tucson. An economic survey of Salt River Valley project in Maricopa County, Arizona. (Ext. circ. 59. 1929. 117 p.)

Hunter, Byron, and Stewart, H. A. Returns from different systems of farming on the Salt River Valley irrigation project. (Ariz. Univ. Col. of Agr. Ext. Service. Ext. circ. 60. 1929. 62 p.)

ARKANSAS

Brodell, A. P., and Brannen, C. O. Economic phases of the Arkansas apple industry. (Ark. Agr. Exp. Sta., Fayetteville. Bul. 236. 1929. 42 p.)

Campbell, C. E. Organization and management of tomato canning factories in Arkansas. (Ark. Agr. Exp. Sta., Fayetteville. Bul. 240. 1929. 32 p.)

Dickey, J. A. Farm organization and management in typical upland sections of Arkansas. (Ark. Agr. Exp. Sta., Fayetteville. Bul. 235. 1929. 91 p.)

Gile, B. M. The farm credit situation in Southwestern Arkansas. (Ark. Agr. Exp. Sta., Fayetteville. Bul. 237. 1929. 62 p.)

Moore, A. N., and Brannen, C. O. Facts and problems of farm credit in Craighead County, Arkansas. (Ark. Agr. Exp. Sta., Fayetteville. Bul. 233. 1929. 46 p.)

CALIFORNIA

California. Dept. of agriculture. Sacramento. Monthly bulletin, v. 18, no. 4, April, 1929.

Developments in market news service in California, by B. H. Critchfield, p. 258-261; Radio brings California's markets to the grower's door, by G. K. York, p. 262-266.

California. Dept. of agriculture, Sacramento. Monthly bulletin, v. 18, no. 5, May, 1929.

The containers [milk bottles] situation in California, by A. W. Hayes, p. 310-312.

California. Dept. of agriculture, Sacramento. Monthly bulletin, v. 18, no. 6, June, 1929.

Partial contents: Fruit and vegetable standardization legislation, 1929, by W. F. Allewelt, p. 339-345; Fruit cold storage facilities in the Pacific Northwest, by Carl Spurlock, p. 352-354; Notes on marketing apples in the Pacific Northwest, p. 361.

COLORADO

Bray, C. I. Financing the western cattleman. (Colo. Agr. Exp. Sta., Fort Collins. Bul. 338. 1928. 87 p.)

Colorado. State board of immigration, Denver. Agricultural statistics, Crops and livestock. 1928. (Bul. 86. 1929. 72 p.)

Hanson, H. C. Range resources of the San Luis Valley. (Colo. Agr. Exp. Sta., Fort Collins. Bul. 335. 1929. 61 p.)

Contents include sections on geography and soil, climate, vegetation, and land classification in relation to grazing.

CONNECTICUT

Connecticut. Agricultural college, Storrs. Digest of the reports of the Connecticut agricultural policy conference. [1929. 4 p.]

Connecticut. Agricultural college. Extension service, Storrs. The outlook for Connecticut agriculture in 1929. (Ext. bul. 125. 1929. 4 p.)

Connecticut. Dept. of agriculture. Bureau of markets, Hartford. Outline of procedure of proposed cooperative vegetable marketing service, June 1-November 1, 1929.

In cooperation with market gardeners of Connecticut.

FLORIDA

Hamilton, H. G. Cost of handling citrus fruit from the tree to the car in Florida. (Fla. Agr. Exp. Sta., Gainesville. Bul. 202. 1929. p. 319-428.)

GEORGIA

Firor, J. W., and Langley, Archie. The watermelon industry of Georgia. (Ga. State Col. of Agr. Ext. Div., Athens. Bul. 369. 1929. 32 p.)

Consists of information on selling and distribution.

Georgia. Dept. of agriculture, Atlanta. Biennial report. June 25, 1927, to December 31, 1928. 67 p.

Bureau of Markets, p. 12-18.

Statistician's report, p. 55-59.

Middleton, R. M. Marketing Georgia peaches. (Ga. Agr. Exp. Sta., Experiment. Bul. 155. 1929. 21 p.)

Moore, A. N., Giles, J. K., and Campbell, R. C. Credit problems of Georgia cotton farmers. (Ga. Agr. Exp. Sta., Experiment. Bul. 153. 1929. 56 p.)

Westbrook, E. C. Results of the 1928 more and better cotton per acre contest. (Ga. State Col. of Agr. Ext. Div., Athens. Bul. 362. 1929. [32] p.)

Includes production costs of contestants.

ILLINOIS

Ashby, R. C. Practices and problems of cooperative livestock shipping associations in Illinois. (Ill. Agr. Exp. Sta., Urbana. Bul. 331. 1929. p. 351-372.)

Case, H. C. M., Wilcox, R. H., and Berg, H. A. Organizing the corn-belt farm for profitable production. (Ill. Agr. Exp. Sta., Urbana. Bul. 329. 1929. p. 256-332.)

Illinois. Dept. of agriculture, Springfield. Illinois crop and live stock statistics. Crops 1927-28. Livestock 1928-29. (Circ. 385. 1929. 178 p.)

In cooperation with U. S. Bureau of Agricultural Economics.

Lloyd, J. W. Directions for grading and packing Illinois peaches. (Ill. Agr. Exp. Sta., Urbana. Circ. 343. 1929. 8 p.)

A revision of Circular 310, published in 1926.

Lloyd, J. W., and Newell, H. M. Observations on the refrigeration of some Illinois fruits in transit. (Ill. Agr. Exp. Sta., Urbana. Bul. 334. 1929. p. 511-544.)

Mumford, H. W. Proposed plan looking toward adjustments in the agriculture of Illinois. (Ill. Agr. Exp. Sta., Urbana. Circ. 340. 1929. 14 p.)

Mumford, H. W., Stewart, C. L., Case, H. C. M., and Johnston, P. E. Developmental study of a rural-urban trade area. (Ill. Agr. Exp. Sta., Urbana. Bul. 326. 1929. 131-208 p.)

Norton, L. J., and Stewart, C. L. Seasonal features of Illinois grain marketing. (Ill. Agr. Exp. Sta., Urbana. Bul. 324. 1929. 46 p.)

INDIANA

Gaylord, F. C., and Cleaver, H. M. Buying tomatoes on grade, 1928. (Ind. Agr. Exp. Sta., Lafayette. Bul. 328. 1929. 16 p.)

IOWA

Davidson, J. B. Life, service and cost of service of farm machinery. (Iowa Agr. Exp. Sta., Ames. Bul. 260. 1929. p. 260-275.)

Hopkins, J. A., Jr. The crop system in Iowa County. (Iowa. Agr. Exp. Sta., Ames. Bul. 216. 1929. p. 279-316.)

The first of a series of four bulletins on farm organization and management in Iowa County.

Hopkins, J. A., Jr. Horses, tractors and farm equipment. (Iowa. Agr. Exp. Sta., Ames. Bul. 264. 1929. p. 375-404.)

The second of the series mentioned above.

Hopkins, J. A. Why hog profits vary. (Iowa. Agr. Exp. Sta., Ames. Bul. 255 (abridged). 1929. 12 p.)

A popular edition of Bulletin 255, An Economic Study of the Hog Enterprise in Humboldt County.

Hurd, E. B. The corn enterprise in Iowa. (Iowa. Agr. Exp. Sta., Ames. Bul. 259. 1929. 225-256 p.)

This is the second bulletin to be issued in this type of farming series.

KANSAS

Howe, Harold. The taxation system of Kansas. (Kan. Agr. Exp. Sta., Manhattan. Circ. 144. 1929. 24 p.)

Kansas. State board of agriculture, Topeka. Report—for the quarter ending December, 1928. (v. 47, no. 188. 141 p.)

"Devoted to Kansas statistics—acres, yields and value of agricultural products, and numbers and value of live stock, for the years 1927 and 1928."

Kansas. State board of agriculture, Topeka. Report—quarter ending March, 1929. 122 p.

Contains the addresses, papers, and discussions at the Board's fifty-eighth annual meeting, January 9-11, 1929.

KENTUCKY

Hutson, J. B., Finn, W. G., and Galloway, Z. L. An economic study of crops and livestock in the Purchase Region of Kentucky. (Ky. Agr. Exp. Sta., Lexington. Bul. 289. 1928. p. 309-433.)

The Purchase Region includes eight counties lying west of the Tennessee River.

MAINE

Wixson, E. A. An economic study of production, destination, and farm price of Maine potatoes. (Me. Univ., Orono. Studies. 2nd ser., no. 12. 1929. 75 p.)

MARYLAND

De Vault, S. H., and Walker, W. P. An economic study of the production of sweet corn and peas in Maryland. (Md. Agr. Exp. Sta., College Park. Bul. 305. 1929. pp. 239-329.)

Farley, H. B. A study of spinach varieties with special reference to their canning qualities. (Md. Agr. Exp. Sta., College Park. Bul. 307. 1929. pp. 383-416.)

Walker, W. P. An economic study of the production of tomatoes in Maryland. (Md. Agr. Exp. Sta., College Park. Bul. 304. 1929. pp. 177-238.)

MASSACHUSETTS

Jefferson, L. P. The consumer demand for apples. (Mass. Agr. Exp. Sta., Amherst. Bul. 250. 1929. 71 p.)

Massachusetts. Dept. of agriculture, Boston. Receipts and sources of Boston's food supply, 1928. 1929. 61 p.

Prepared by Eleanor W. Bateman, investigator, Division of Markets.

Mighell, R. L., and Branch, F. H. Causes of differences in poultry profits. (Mass. Agr. Exp. Sta., Amherst. Bul. 251. 1929. p. 75-91.)

MICHIGAN

Gardner, V. R., Marshall, R. E., and Hootman, H. D. Size of peaches and size of crop. (Mich. Agr. Exp. Sta., East Lansing. Spec. bul. 184. 1928. 27 p.)

On p. 4, average prices for peaches of different sizes are given for a three year period.

Hill, E. B., and Riddell, F. T. What makes some farms pay. A business analysis of 114 farms in Eaton County, Michigan. (Mich. Agr. Exp. Sta., East Lansing. Spec. bul. 187. 1929. 26 p.)

Michigan. Dept. of agriculture, Lansing. Michigan dairy manufacturing plants. (Circ. 129. 1929. 17 p.)

A list of the plants with addresses.

MINNESOTA

Metzger, Hutzel, and Price, H. B. Economic aspects of local elevator organization. (Minn. Agr. Exp. Sta., University Farm, St. Paul. Bul. 251. 1929. 55 p.)

Minnesota. Dept. of agriculture, St. Paul. Minnesota annual crop and live-stock statistics, 1927-1928. (Bul. 65. 32 p.)

Price, H. B., and Hoffer, C. R. Services of rural trade centers in distribution of farm supplies. (Minn. Agr. Exp. Sta., University Farm. Bul. 249. 1928. 55 p.)

"A study of the buying side of the farm family business in contrast with the selling side, to which major attention is usually given."

Schwantes, A. J. The combine comes to Minnesota. (Minn. Univ. Col. of Agr. Ext. Div., University Farm, St. Paul. Circ. 30, 1929. [4 p.])

Extracted from an experiment station bulletin now in preparation.

MISSOURI

Logan, E. A., and Mayes, Jewell. Missouri farm census by counties, 1928. (Mo. State Board of Agriculture, Jefferson City. Bul. v. 27, no. 2. 1929. 15 p.)

Missouri. Agricultural experiment station, Columbia. Land valuation II. (Bul. 269. 1929. 47 p.)

Consists of papers presented at the second Short Course in Land Valuation on July 24 and 25, 1928.

Thomsen, F. L., and Reid, W. H. E. Developing new markets for Missouri butterfat. (Mo. Agr. Exp. Sta., Columbia. Bul. 267. 1929. 32 p.)

MONTANA

Barger, J. W. The County library in Montana. (Mont. Agr. Exp. Sta., Bozeman. Bul. 219. 1929. 54 p.)

Barger, J. W. Rural community halls in Montana. (Mont. Agr. Exp. Sta., Bozeman. Bul. 221. 1929. 52 p.)

Johnson, S. E. An economic analysis of production problems in the Bitter Root Valley. (Mont. Agr. Exp. Sta., Bozeman. Bul. 220. 1929. 123 p.)

Johnson, S. E. The McIntosh apple industry in Western Montana. (Mont. Agr. Exp. Sta., Bozeman. Bul. 218. 1929. 62 p.)

An economic study.

Montana. College of agriculture and mechanic arts. Extension service, Bozeman. Progress. A few steps forward in Montana's agricultural program. ([Bul.] 97. 1929. 50 p.)

Montana. Dept. of agriculture, labor and industry, Helena. Montana, v. 4, no. 1, June, 1929. 68 p.)

This is the 1928 farm review number.

NEBRASKA

Nebraska. State board of agriculture, Lincoln. Annual report—1928. 724 p.

Contains also the proceedings of allied associations including the papers read at the Rural Economics Session of the Nebraska Crop Growers Association.

Rankin, J. O. The use of time in farm homes. (Neb. Agr. Exp. Sta., Lincoln. Bul. 230. 1928. 50 p.)

NEW HAMPSHIRE

Abell, M. F. Potato production costs in New Hampshire. (N.H. Agr. Exp. Sta., Durham. Bul. 239. 1929. 35 p.)

- Rinear, E. H. White Mountain demand for vegetables and poultry products. (N.H. Agr. Exp. Sta., Durham. Bul. 241. 1929. 26 p.)
The preferences of ten representative summer hotels were studied.

NEW JERSEY

- Black, L. M. Egg production, monthly costs and receipts on New Jersey poultry farms, November, 1927-October, 1928. (N.J. Agr. Exp. Sta., New Brunswick. Hints to poultrymen, v. 17, no. 4, Jan., 1929. 4 p.)
Fenton, J. M. The cost of producing honey in New Jersey and other economic data on beekeeping. (N.J. Dept. of Agr., Trenton. Circ. 159. 1929. 44 p.)
New Jersey. Dept. of Agriculture, Trenton. Requirements and rules for the inspection and certification of New Jersey second-crop seed potatoes, 1929. (Circ. 164. 1929. 6 p.)
New Jersey. Dept. of agriculture, Trenton. Thirteenth annual report, 1927-1928. 132 p.
Report of the Bureau of Markets, p. 50-91; Report of the Bureau of Statistics and Inspection, p. 92-98.

NEW MEXICO

- Hauter, L. H. Milk production on the Elephant Butte irrigation project. (N.M. Col. of Agr. and Mech. Arts. Agr. Ext. Service. State College. Ext. circ. 99. 1929. 32 p.)
One of five circulars being issued as a direct outgrowth of the economic Conference held in February, 1927

NEW YORK

- Spencer, Leland. An economic study of the collection of milk at country plants in New York. (N.Y. Cornell Agr. Exp. Sta., Ithaca. Bul. 486. 1929. 47 p.)
Tukey, H. B. Fruit regions and varieties of eastern New York (N.Y. Agr. Exp. Sta., Geneva. Bul. 563. 1929. 82 p.)
Walker, Dilworth. The production and marketing of New York market peas. (N.Y. Cornell Agr. Exp. Sta., Ithaca. Bul. 475. 1929. 137 p.)

NORTH CAROLINA

- North Carolina. Agricultural experiment station, State College Station, Raleigh. Fifty-first annual report, June 30, 1928. 94 p.
Report on agricultural economics, p. 15-16. Report on rural sociology. p. 91.
North Carolina. Agricultural experiment station, Raleigh. Farm income and taxation in North Carolina. (Bul. 267. 1929, p. 46-188.)
Reprinted from the 1928 Report of the North Carolina Tax Commission.

NORTH DAKOTA

- Benton, A. H., and others. The combined harvester-thresher in North Dakota. (N.D. Agr. Exp. Sta., Fargo. Bul. 225. 1929. 49 p.)

North Dakota. Agricultural college. Extension division. Fargo. Wheat situation, farm storage and feeding value. (Circ. 88. 1929. 20 p.)

OHIO

Ballou, F. H. What does it cost to grow a bushel of apples? (Ohio Agr. Exp. Sta., Wooster. Bul. 435. 1929. 20 p.)

The data were obtained during a five-year period from a small commercial orchard in Licking County.

Johnston, P. E., and Arnold, C. R. Managing a farm in the corn borer area. (Ohio State Col. of Agr. Ext. Service, Columbus. Bul. 79. 1929. 24 p.)

Gives farm practices on seven selected farms.

McKay, Hughina. Food consumption of farm families. (Ohio. Agr. Exp. Sta., Wooster. Bul. 433. 1929. 34 p.)

Includes a table giving the average amounts and values of foods used by 47 farm families during the year 1926.

Minneman, P. G., and Falconer, J. I. Large land holdings and their operation in twelve Ohio counties. (Ohio State Univ. Dept. of rural economics. Columbus. Mimeograph bul. 17. 1929. 31 p.)

Moore, H. R. Semi annual index of farm real estate values in Ohio, Jan. 1 to June 30, 1929. (Ohio State University. Dept. of rural economics, Columbus. Mimeograph bul. 19. 1929. 10 p.)

Ohio. Agricultural experiment station, Wooster. Bimonthly bulletin, no. 138, May-June, 1929.

Partial contents: The behavior of the corn borer in stored corn, by J. B. Polivka and E. A. Herr, p. 103-105; The price of Ohio wheat, by J. I. Falconer, p. 106; Real estate tax and income to owner on cash-rented farms in Central Ohio, by H. R. Moore, p. 107; Produce receipts by rail and by truck on the Columbus wholesale market, July 2-Dec. 31, 1928, by C. W. Hauck, p. 108-109; Age distribution of Ohio farm population, by R. G. Beck, p. 110-111.

Ohio. Agricultural experiment station, Wooster. Bimonthly bulletin, no. 139, July-August, 1929.

Partial contents: Trend in prices of farm products, cash rent, and farm real estate in Ohio, by R. L. Moore, p. 137-139; Apple sales of an Ohio orchard company in 1928, by C. W. Hauck, p. 139-141.

Ohio. Agricultural experiment station, Wooster. Bimonthly bulletin, no. 140, September-October, 1929.

Partial contents: The combined harvester-thresher in Ohio in 1928, by J. H. Sitterley, p. 173-174; Relation of net cash receipts and expenditure for family living, by C. E. Lively, p. 174-175.

Ohio. Agricultural experiment station, Wooster. Forty-seventh annual report, 1927-28. 180 p.

Report on rural economics, p. 134-140.

Ohio. State university. Dept. of rural economics, Columbus. A complete farm record for use in teaching farm accounting in rural schools. 1928. 15 p.

Ohio. State university. Extension service, Columbus. Analysis of records of Franklin Co. poultry demonstration farms. (Printed ser. 3. 1928. 4 p.)

Sitterley, J. H. The combined harvester-thresher in Ohio in 1928. (Ohio State University. Dept. of rural economics, Columbus. Mimeograph bul. 18. 1929. 15 p.)

OKLAHOMA

Fetrow, W. W. Attitudes of Oklahoma farmers toward the Oklahoma cotton growers' association. (Okla. Agr. Exp. Sta., Stillwater. Bul. 178. [1929] 60 p.)

Thorfinnson, T. S. What Oklahoma farm account records show. (Okla. Agr. and Mech. Col. Ext. Service, Stillwater. Circ. 250. 1928. 13 p.)

OREGON

Besse, R. S., and Jamison, N.C. Dairy farm incomes required to maintain standard farm homes in Oregon. (Ore. Agr. Col. Ext. Service, Corvallis. Farm income ser. 1, 1929. 16 p.)

Besse, R. S., and Cooper, M. R. Oregon apple prices by variety, grade and size, 1922-1926. (Ore. Agr. Exp. Sta., Corvallis. Bul. 244. 1929. 24 p.)

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Dickey, J. B. R. Potato grading. (Pa. State Col. Div. of Agr. Extension, State College. Circ. 127. 1929. [4 p.]

James, D. M., and Donaldson, R. B. Improving quality by grading cannery products. (Pa. Dept. of Agr., Harrisburg. Gen. bul. 474. 1929. 13 p.)

Josephson, H. B., Humpheries, W. R., and Church, L. M. A farm machinery survey of selected districts in Pennsylvania. (Pa. Agr. Exp. Sta., State College. Bul. 237. 1929. 15 p.)

Josephson, H. B., and Blasingame, R. U. Farm-power and labor. (Pa. Agr. Exp. Sta., State College. Bul. 238. 1929. 20 p.)

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A list of commercial orchards having 500 or more apple or peach trees. Pennsylvania. Dept. of agriculture, Harrisburg. Commercial poultry farms in Pennsylvania. 1929. 46 p.

List of those farms having 500 or more hens and pullets.

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Includes the names of the president and secretary of each association.

Stern, J. K. A study of the business practices of farmers' local cooperative purchasing associations in Pennsylvania. (Pa. Agr. Exp. Sta., State College. Bul. 242. 1929. 30 p.)

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Rogers, R. H., and Elliott, F. F. Types of farming in South Dakota. (S.Dak. Agr. Exp. Sta., Brookings. Bul. 238. 1929. 71 p.)

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Report of the Dept. of Agricultural Economics, p. 38-39.

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Report of the Division of Markets, p. 81-84.

TEXAS

Gabbard, L. P., Hutson, J. B., and Gaston, T. L., Jr. Systems of farming for the Black Waxy Prairie Belt of Texas. (Tex. Agr. Exp. Sta., College Station. Bul. 395. 1929. 57 p.)

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Texas. Dept. of agriculture, Austin. Citrus fruit law. Rules, regulations and instructions relative to its enforcement. (Bul. 94. 1929. 18 p.)

Texas. Dept. of agriculture, Austin. Texas registration and certification act of cotton seed. (Bul. 92. 1928. 18 p.)

VERMONT

Gilbert, C. W. Prices of farm products in Vermont, July, 1925-December, 1928. (Vt. Univ. Col. of Agr. Ext. Service, Burlington. Circ. 51. 1928. 16 p.)

A compilation of figures from federal sources except those for milk and butterfat.

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- Vernon, J. J., Johnson, T. D., and O'Byrne, Wilbur. The adjustment of agricultural production to meet home market demands in the Clifton-Forge-Covington trade area. (Va. Agr. Exp. Sta., Blacksburg. Bul. 266. 1929. 30 p.)
- Virginia. Dept. of agriculture. Division of agricultural statistics, Richmond. Virginia farm statistics, 1928. (Bul. 6. 1929. 105 p.)

WEST VIRGINIA

- Davis, H. B. Marketing of apples, peaches and potatoes in West Virginia. (W.Va. Dept. of agriculture, Charleston. Bul. [unnumbered. 1929] 65 p.)
- West Virginia. Dept. of agriculture, Charleston. West Virginia farm statistics, 1929. August, 1929. 31 p.
- Contains crop and livestock figures by counties for 1927 and 1928.

WISCONSIN

- Hibbard, B. H., Hartman, W. A., and Sparhawk, W. N. Use and taxation of land in Lincoln County, Wisconsin. (Wis. Agr. Exp. Station., Madison. Bul. 406. 1929. 38 p.)
- McDonald, Marguerite. Crop and market reports. History and present status in the United States. A selected bibliography. (Wis. Dept. of markets, Madison. Bul., v. 10, no. 3. 1929. 33 p.)
- Wisconsin. Dept. of agriculture, Madison. Biennial report, 1927-1928. 152 p.
- Division of agricultural statistics, p. 30-40.
- Zwinggi, Lois. Legal phases of agricultural marketing and agricultural co-operation. A selected bibliography. (Wis. Dept. of markets, Madison. Bul. v. 10, no. 4, 1929. 20 p.)

PUBLICATIONS OF THE BUREAU OF AGRICULTURAL ECONOMICS

Issued June 19-October 5, 1929

TECHNICAL BULLETIN

124. Some factors affecting the marketing of wool in Australia, New Zealand, the Union of South Africa, England, and France, by J. F. Walker. June, 1929. 94 p.

CIRCULARS

73. The cold storage of eggs and poultry, by Thomas W. Heitz. June, 1929. 55 p.
94. Farmers' cooperative associations in the United States, 1929, by Chris L. Christensen. August, 1929. 66 p.

NEWS NOTES

By executive order, the entire Division of Cooperative Marketing, Bureau of Agricultural Economics, was transferred to the Federal Farm Board early in October.

Dr. J. F. Booth has been appointed Commissioner of Agricultural Economics, in the Dominion Department of Agriculture, at Ottawa, Canada. The Agricultural Economics Branch, of which Dr. Booth will have charge, is a new undertaking.

Mr. Harold E. Botsford has left Cornell University, where he has been teaching marketing for six years, to join the Bureau of Agricultural Economics. He will be engaged in studies of consumers' preference and demand for eggs.

H. B. Boyd, who has been doing graduate work in the Department of Agricultural Economics and Farm Management at Cornell University, has accepted a position at the Connecticut Agricultural College to do research work in tobacco prices.

Dr. F. A. Buechel is now at the University of Texas, Austin, as Assistant Director of the Bureau of Business Research.

Mr. Chris L. Christensen was appointed Secretary of the Federal Farm Board, in July, when he resigned his position as head of the Division of Cooperative Marketing, Bureau of Agricultural Economics.

Dr. Whitney Coombs has resigned from the Bureau of Agricultural Economics to become head of the Department of Economics, St. Lawrence University, Canton, New York.

Dr. Paul A. Eke, recently at the University of West Virginia, has gone to the University of Idaho, Moscow, Idaho, as Professor of Agricultural Economics.

Mr. Stephen deBlois Fessenden, Statistician in the Division of Crop and Livestock Estimates, Bureau of Agricultural Economics, and one of the oldest members in length of service, died in Washington, September 21, of heart failure, aged 73 years. He was in the government service nearly fifty years.

Mr. Asher Hobson, for the past seven years Permanent Delegate of the United States to the International Institute of Agriculture at Rome, has joined the Staff of the Gianinni Foundation as Professor of Agricultural Economics.

Dr. John A. Hopkins, Jr., sailed from New York on September 21, to devote three months' leave from Iowa State College to a study of methods of farm accounting in England, Denmark, Germany, and Switzerland. He will direct particular attention to analysis and application of farm accounting materials on the farms where the records were obtained.

Mr. Edgar B. Hurd, recently at the Iowa State College, has accepted appointment in the Division of Farm Management and Costs, Bureau of Agricultural Economics.

Dr. Paul G. Minneman, recently engaged in research and teaching in Agricultural Economics at Ohio State University, has joined the Division of Farm Management and Costs, Bureau of Agricultural Economics.

Mr. Arthur N. Moore has returned to Harvard University to complete the work necessary for a doctor's degree. He has been studying agricultural credit problems in the Bureau of Agricultural Economics.

Mr. Millard Peek has returned to Iowa State College as Professor of Agricultural Economics.

Dr. H. A. Ross, formerly Professor of Marketing at the State College of Agriculture, Cornell University, has accepted a position with the Borden Company, New York City, and will be in charge of the research division of that organization.

Mr. Walter J. Roth, one the Fellows of the Social Science Research Council, who studied last year in Europe with Dr. Laur and elsewhere, has joined the staff of the Division of Farm Management and Costs, Bureau of Agricultural Economics.

Mr. Burton D. Seeley, formerly at the Colorado Agricultural Experiment Station, has accepted a position in the Division of Agricultural Finance, Bureau of Agricultural Economics.

The following names have been added to the list of members since June 20, 1929:

- ARMSTRONG, JOHN W., 500 W. Church St., Champaign, Ill.
 BENSON, EZRA T., County Agt., Preston, Idaho.
 BRIGHAM, E. S., 146 N. Main St., St. Albans, Vt.
 CARTER, DEWEY J., Dairymen's League, 11 West 42nd St., New York City.
 CLAYTON, CLAUD F., Bur. Agrl. Econ., Washington, D.C.
 DOWELL, J. M., Do-Well Agrl. Service, Champaign, Ill.
 DREWRY, C. B., County Agt., Marinette, Wis.
 ERDMANN, HERBERT H., Tripp Hall, Madison, Wis.
 FABILA, ING. GILBERTO, La Ave., No. 3, Colonia Anzures, Mexico City, Mexico.
 GARMAN, C. C., Alabama Polytechnic Inst., Auburn, Ala.
 GOUGLER, F. A., 209 Penn Ave., Urbana, Ill.
 GUNNELS, CHAS. E., c/o Deere & Co., Moline, Ill.
 GUSTAFSON, Supt. GILBERT, Milford, Iowa.
 HAMMER, C. H., Univ. Farm, St. Paul, Minn.
 HANAU, DR. ARTHUR, Duesseldorferstrasse 46iv, Berlin, W. 15, Germany.
 HERRINGTON, W. O., East Third St., El Paso, Ill.
 HOLMES, M. L., New York State Col. of Agr., Ithaca, N.Y.
 HUTCHESON, J. R., Virginia Agrl. and Mech. Col., Blacksburg, Va.
 JOHNSON, C. E., Farm Adv., Watseka, Ill.
 KELSO, M. M., Box 63, Storrs, Conn.
 KING, J. S., Dept. of Agr. for Scotland, York Bldgs. Queen St., Edinburgh, Scotland.
 KUHRT, W. J., Bur. Agrl. Economics, Washington, D.C.
 LOGAN, E. A., 113 Waters Hall, Columbia, Mo.
 LONGMIRE, F. E., Farm Advisor, Morris, Ill.
 MERTSKY, MISS GRACE C., 4546 Wolf Road, Western Springs, Ill.
 MURRAY, NAT C., 317 7th Ave., LaGrange, Ill.
 MYERS, KENNETH H., Bur. Agrl. Econ., Washington, D.C.
 NELSON, MILTON N., Head Dept. Econ. and Sociology, Oregon State College, Corvallis, Oregon.
 PATTERSON, T. M., Agrl. Service Dept., New Capitol Bldg., Jackson, Miss.
 RICE, LLOYD P., 6 Rope Ferry Road, Hanover, N.H.

- ROSS, ROB'T C., Dept. Farm Organ. and Mgt., Univ. Illinois, Urbana, Ill.
- SHORT, J. B., 330 S. Lambeth Rd., London, S.W.S. England.
- STEVENS, W. MACKENZIE, Louisiana State Univ., Baton Rouge, La.
- URRUTIA, H., Caixa Postal 778, Porto Alegre Estado Rio Grande do Sul, Brazil, S. America.
- VENSTROM, CRUZ, State Exp. Station, Reno, Nevada.
- WALLMARK, C. L., University Farm, St. Paul, Minn.
- WOOD, CHESTER W., Miller, S.Dak.
- WRIGHT, IANTHUS, Hinckley, Utah.
- YOUNGSTROM, C. O., Ext. Division, State House, Boise, Idaho.
- ATLANTA AND WEST POINT R.R. Co., E.S. Center, Gen. Agrl. Agt., Atlanta, Ga.
- BABSON'S STATISTICAL ORGAN., INC., Wellesley Hills, 82, Mass.
- BREEDER'S GAZETTE, Samuel R. Guard, Stock Yards Sta., Chicago, Ill.
- ILLINOIS AGRIL. ASSN., Ray E. Miller, 1200 Transportation Bldg., Chicago, Ill.
- ILLINOIS CHAMBER OF COMMERCE, Research Dept., 35 E. Wacker Dr., Chicago, Ill.
- PRAIRIE FARMER, C. V. Gregory, Ed., 1230 W. Washington Blvd., Chicago, Ill.
- CENTENARY COLLEGE, Shreveport, La.
- DARTSMOUTH COLLEGE LIBRARY, Hanover, N.H.
- LIBRARY ASSOCIATION, 185 10th St., Portland, Ore.
- TENNESSEE POLYTECHNIC INST., Cookeville, Tenn.
- LIBRARIAN, LONDON SCHOOL OF ECON., Houghton St., Aldwych, London, W.C. 2, England.
- NOJISHIKENJO-KOWNOSU-SHIKENCHI, Imp. Agrl. Exp. Sta., Knownosu-Machi, Saitama-Ken, Japan.
- THE TAIHOKU IMPERIAL UNIVERSITY LIBRARY, Taihoku, G, Formosa, Japan.
- THE REGISTRAR, Massey Agrl. College, Palmerton, N., New Zealand.

TENTATIVE PROGRAM OF THE ANNUAL MEETING OF THE
AMERICAN FARM ECONOMIC ASSOCIATION

New Willard Hotel, Washington, D.C. December 27-30, 1929

FRIDAY, DECEMBER 27

Forenoon

General Theme: The Agricultural Problem

Policy and program of the Federal Farm Board—Alexander Legge, Chairman of the Board.

Possibilities and problems of the Farm Board—Joseph S. Davis, Food Research Institute.

Afternoon

Round Table 1. Farm Management.

The organization of farm management and outlook information for effective extension use—Henry Keller, Jr., University of New Jersey.

Interpretation of farm efficiency factors—J. A. Hopkins, Iowa State College.

Development of commercial farm management services.

Round Table 2. Marketing.

Joint session with the marketing group of the American Economic Association. General Theme: Large-scale merchandising.

Evening

General Theme: Electricity in Agriculture

SATURDAY, DECEMBER 28

Forenoon

Business meeting.

General Theme: The Tariff Problem

Effects of the Tariff Act of 1922 and a look ahead—B. H. Hibbard, University of Wisconsin.

Problems involved in the measurement of the effects of a tariff.

Joint luncheon with Rural Sociologists

A. W. Hyde, Secretary of Agriculture

Afternoon

General Theme: Research Methods and Graduate Training

New developments in research methods—H. R. Tolley.

Training for research and teaching.

Evening

Agricultural economics in Europe.

Farm relief measures in Europe.

MONDAY, DECEMBER 30

Forenoon

General Theme: Price Analysis and Price Forecasting

A program for the improvement and elaboration of data needed for commodity price forecasting.

Evaluation of methods used in price forecasting.

The use of statistical methods in commercial price forecasting.

Farm Economics Luncheon

Afternoon

General Theme: Economic and Social Consequences of Mechanization

Joint session with the American Economic Association—Henry J. Dennison, Dennison Manufacturing Co.; E. G. Nourse, Institute of Economics.

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